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OHIO

MEDICAL AND SURGICAL JOURNAL.

Vol. I. No. 4. Columbus, December, 1876. New Series.

ORIGINAL COMMUNICATIONS.

ART. I.—*The Relation of Trophic changes to certain alterations of Sensation and Motility.* By ALLAN MCLANE HAMILTON, M.D., Visiting Physician to Epileptic and Paralytic Hospital, New York; Member of American Neurological Association, etc.

One of the most attractive neuro-physiological studies is that of trophic influence, and though the existence of trophic nerves is denied by many, there are, on the other hand, a number of able investigators who have given us reports of definite and valuable experiments, which clearly prove the existence of certain nerve fibers, which markedly influence nutrition. The neurologist will constantly meet with clinical examples of such changes, which are beautiful evidences of this form of pathological action.

It was Waller who announced the indisputable fact that nerves cut off from their centers degenerate. This may be demonstrated by cutting the posterior root of a spinal nerve between the intervertebral ganglion and its emergence from the cord. The part attached to the cord degenerates, while that connected with the ganglion retains its vitality. If, on the other hand, the cut be made at the distal side of the ganglion, the remote trunk degenerates, while that coming from the ganglion is uninjured. This shows rather conclusively that certain nerve trunks depend upon their connection with, and the normal condition of, the ganglionic cen-

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ters they may be attached to. This experiment will enable us to appreciate how disease, such as neuritis, for example, may destroy the connection of any nerve with a ganglionic center, and peripheral changes may result.

Again, in certain central diseases, such, for instance, as progressive muscular atrophy, it will be found that certain cells in the antero-lateral columns of the cord are destroyed, which send fibers to special muscles which are atrophied, while other cells in the locality remain healthy. Duchenne and Westphal advanced this idea of trophic cells, and clinical experience certainly proves that they may not have been wrong in their conclusions.

In defiance, however, of this law of Waller's, it is proved, by one disease especially, that the other functions of a nerve, whether it be sensory or motor, may remain perfectly intact, and still trophic changes may follow. Brachet, Flint, and others have proved that development has taken place in monsters, who have lived some time without any cerebro-spinal axis. Consequently this is an argument for the dependence of nutritive changes upon vaso-motor action.

As an example of the disease I have alluded to, where a healthy cerebro-spinal nerve may exist, and still trophic changes of the most decided character may occur, I may mention progressive partial facial atrophy. So far, I think no post-mortem examinations have been made, but even if they have not, there is no affection of sensation or motion which points to the normal condition of the cerebro-spinal nerve fibers.

I think we may assume that trophic processes are closely connected with modifications of sensorial and motorial function, though they may not be directly dependent upon either.

I. Trophic changes may be influenced by altered sensation alone.

II. Trophic changes may be influenced by motorial alterations.

III. Trophic changes may occur independent of any alteration of motorial or sensorial function.

Neuralgia furnishes us with examples of the first class, and a continued hyperæsthetic condition may be followed by—1. Muscular atrophy. 2. Destruction of hair and pigment cells. 3. Eruptions dependent upon local loss of vitality. In sciatica oftentimes the affected leg will be an inch or more less in circumference than its fellow, and in facial neuralgia the wasting of certain muscles of the face is sometimes seen. Nothnagel considers atrophy following sciatica to be due to an affection of the nerves governing the vessels, and that the loss of substance depends upon an insufficient blood supply. Of thirty cases he examined, five were found with atrophied limbs, and "four of these were complicated with vascular cramp," and not to any change in the nerve fibers themselves. Now I think it has been sufficiently proved that trophic changes (*per se*) may exist without any vascular complication whatever. This can be verified by the observations of Himes and others, who have found unilateral vaso-motor neuroses of long standing without any wasting. Even supposing such want of use, on account of the painfulness of the effort, be given for a cause, I do not think it will account for the change, for many cases have been met with in individuals who took as much exercise as others more healthy. The blood supply of the muscles is clearly not interrupted.

Neuralgic patients occasionally attract attention on account of certain curious changes of the hair of the head and face. White tufts in the track of the supra-orbital branch of the fifth nerve, white hairs in the eyebrows, etc., bear evidence of the close connection between severe pain and trophic changes.

Weir Mitchell * relates a number of instances, some of which I have seen repeatedly. Not only does the hair fall

* Injuries of Nerves, p. 163.

out sometimes with neuritis, but it may also become thick or bushy. These changes have been witnessed chiefly in the cases of hyperæsthetic skin, by Larrey and others. Weir Mitchell dwells upon certain trophic alterations following paralysis, and he has seen the hair disappear from the fingers, and the nails become curved.

A familiar illustration of this mal-nutrition which follows acute pain is the carious state of the teeth which old neuralgics suffer.

In one case under my charge at present the teeth on one side are perfectly white, sound, and healthy, while the others had become carious and fallen out. So extensive is the alopecia in this individual that I am inclined to think it is the result of syphilis, but am unable to trace it to that disease.

These changes are admirably exemplified by various skin diseases, attended by exquisite pain. Herpes zoster is the most pronounced, perhaps, of this class. It is without doubt the result of disordered nerve action, and is connected with neuralgia, such neuralgia and the eruption being cured by galvanism. Certain remedies, acting upon the nerve centers, will accomplish the same result, while local ointments do no good whatever.

Vulpian has recently shown the existence of pemphigus with certain amytrophic paralyses, and we may consider these skin diseases to depend upon imperfect vitality of the skin. Cases have been published of obstinate ulceration of the cornea dependent upon facial neuralgia, and these trophic changes, as well as those I have mentioned, disappear with the pain under appropriate treatment, the opacity and ulceration passing away. It is almost unnecessary to dwell upon the myopathies following occlusion of motor fibers, or trunks, atrophies which are due not only to subsequent want of exercise, but to central destruction as well.

A striking and beautiful illustration of the third class is partial facial atrophy. In this disease there is absolutely no

pain, nor is there impairment of voluntary muscular power. The train of symptoms is peculiar: 1. Loss of hair, or change of color. 2. Skin becomes tense, parchment-like, and white. 3. Atrophy of one half of tongue. 4. The absence of central disease. 5. Atrophy always local. 6. Sensory and motor filaments always healthy.

Himes,* whom I have already quoted, considers the change to be due to a degeneration of nerve filaments which go to certain cells, these cells being trophic. He cites Pflüger, Erb, and Vulpian in support of his theory.

Whatever we know, it is so far only clinical. We can do little more than theorize. Waller has settled one point, perhaps the most important one, and Jewell† has found certain cells in the posterior spinal ganglia which evidently preside over specific nutritive processes.

NEW YORK, 123 East Thirtieth street, October 20.

ART. II—*Infantile Tetanus, Trismus Neonatorum, Trismus Nascentium.* By J. H. POOLEY, M.D., of Dobbs's Ferry, Westchester County, New York. Read before the Yonkers Medical Association.

This disease has lately been recalled to my attention by the fact that I and my neighbor, Dr. Ives, have each had a case in the village of Hastings, on the Hudson. This complaint is rarely seen in country practice, and is sometimes confounded with inward spasms, which occurs much oftener, but is perfectly distinct, and much less fatal. It differs from it in its pathology and symptoms, and is generally unaffected by any known remedy. It runs its course, in spite of all treatment, to a fatal issue. Dr. Sims and a few other writers have noticed it, but it has appeared very strange to me that the various obstetrical authors should have almost passed it by unnoticed.

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* Report of case of Hemiatrophia facilalis progressiva (British Medical Journal, August 26, 1876).

† Dr. Jewell's paper before American Neurological Association, 1876.

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Its etiology is rather difficult and unsatisfactory, but without doubt one of its frequent causes is want of attention to the cord and umbilicus, especially cleanliness, until the casting off of the same is complete.

Tetanus infantum occurs probably in all countries, but it does not greatly increase the mortality, except in certain localities. Some of the British and continental physicians, whose observations of disease have been ample, confess that they have seen so few cases that they have almost no personal knowledge of this malady. On the other hand, there are, or have been, places in every zone where it is or has been so prevalent as to sensibly check the increase of population. The attention of the profession, more than half a century since, was directed to the prevalence of tetanus in the island of Heimacy, off the coast of Iceland. On this island scarcely an infant escaped, while on the mainland scarcely one was affected. The inhabitants live chiefly on the flesh and eggs of the sea-fowl, and are filthy and degraded in their habits. About the year 1810 the Danish Government deputed the land-phisicus of Iceland to visit Heimacy and ascertain the nature of the disease which was so destructive to the infants. Although this gentleman from his brief stay saw no case himself, he obtained interesting particulars in reference to the disease from the priests and parents. At this time scarcely an infant escaped. Again, according to Dr. Schleisner, whose report in reference to the same locality was published forty years later, tetanus was still the most fatal of all infantile maladies. Tetanus infantum is also represented as very fatal in the island of St. Kilda, off the coast of Scotland. In the temperate regions of America and Europe cases are not frequent, except occasionally in the poor quarters of the cities, in foundling hospitals, and rarely in country towns, where the conditions are favorable for its occurrence. The records of the Dublin, Stuttgart, and Stockholm lying-in asylums furnish many cases. In the town of Fulda, Germany, in

1802, Dr. Schneider saw six cases in fourteen days, while a midwife in the same place stated that she had seen more than sixty in nine years. But the greatest mortality from tetanus infantum is in warm climates, both of the Eastern and Western Hemispheres. In the West Indies, the southern portion of the United States, the equatorial regions of South America, and in the islands of Minorca and Bourbon it has, in many localities, been the most frequent and fatal of infantile maladies. It is a remarkable fact that in the warm regions of the United States the victims are chiefly negro infants. L. S. Grier, M.D., of Mississippi, says, in the New Orleans Medical and Surgical Journal, May, 1846, "It is a disease of fatal frequency here, and on the cotton plantations of Alabama." Dr. Wooten, however, says he has never seen a white child affected with it. In New Orleans, according to the death statistics in our possession—which, however, relate to only one year—tetanus infantum is the most fatal of all diseases except phthisis. Mr. Maxwell says, in the Jamaica Physical Journal, 1835, "From observations that I have made for a series of years, I found that the depopulating influence of trismus neonatorum was not less than twenty-five per cent. It scarcely has a parallel within the bills of mortality." This gentleman's observations relate to the West Indies. Similar statements are made in reference to this malady as it occurs in Cayenne and Demarara, in South America.

While tetanus infantum prevails in regions wide apart, and presenting very diverse climatic conditions, there is a similarity as regards the personal and domiciliary habits of the people who suffer most from its occurrence. It occurs chiefly among those who are filthy and degraded in their habits, who live, either from choice or necessity, in neglect of sanitary requirements. This fact aids us to some extent in an understanding of the causes. That uncleanliness and impure air are a cause of tetanus is as fully demonstrated

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as most facts in the etiology of diseases. The statements of physicians in the Southern States, who speak from extensive observation among the negroes, are strongly corroborative of the idea that the disease is in great measure due to uncleanliness and impure air. In certain cases the assignable cause is exposure to wet or cold, or to a variable temperature, which it is known occasionally causes tetanus in the adult. Another cause is believed to be some irritation in the bowels, as from retained meconium. Observers in the Southern States and elsewhere occasionally mention this as a cause.

In 1846 there appeared from the pen of Dr. Sims, then practicing at Montgomery, Alabama, a paper designed to show that tetanus of the new-born is produced by pressure exerted on the nervous center, through depression of the occipital bone. In 1848 the same writer published a second paper, also in the American Journal of Medical Science, fully enunciating his theory, as follows: "That trismus neonatorum is a disease of centric origin, depending on a mechanical pressure exerted on the medulla oblongata and its nerves; that this pressure is the result, most generally, of an inward displacement of the occipital bone, often very perceptible, but sometimes so slight as to be detected with difficulty; that this displaced condition of the occiput is one of the fixed physiological laws of the parturient state; that when it persists for any length of time after birth it becomes a pathological condition, capable of producing all the symptoms characterizing trismus neonatorum, which are instantly relieved simply by rectifying this abnormal displacement, and thereby removing pressure from the base of the brain." In both papers cases are narrated in support of this theory, but there are serious objections to this mode of explaining the occurrence of the disease. In the first place, if this explanation were correct, tetanus ought ordinarily to occur sooner, for the occiput is as much depressed previously, and in the majority of cases more depressed than at the period

when it does actually commence. Pressure on the medulla would certainly be followed by immediate and marked symptoms, instead of an immunity for four or five days.

Again, well known facts in reference to the causation of tetanus infantum conflict with Dr. Sims's theory, as, for example, epidemics of the disease, its prevalence in one locality and absence in another, although no particular attention is given to the position of the infant, the diminution of the number of cases by greater attention to cleanliness, of which there is abundant proof. Moreover, there are many reported cases of this disease at the commencement of which there was no perceptible displacement of the occipital bone. Dr. J. Lewis Smith justly observes, "The inequality of the cranial bones often observed in tetanus infantum should, in my opinion, be explained as follows: When the new-born infant becomes emaciated the volume of the brain is diminished, like that of the trunk or limbs, and the sinking of the occipital bone simply corresponds with the amount of waste in the cerebral substance. Whatever the disease in the young infant, if there is much emaciation the parietal bones will usually be found more prominent than the occipital. Now in fatal tetanus infantum emaciation is very rapid; those fleshy and plump, if the disease do not speedily end, become pinched and wrinkled. Viewed in this light, the occiptal depression should be regarded as a result, not cause of the tetanus." Athough we do not accept the theory which attributes tetanus infantum to occipital depression, there are a few cases on record in which it was apparently due to injury of the head received at birth. Dr. Sims has related one such case, that of a negro infant. Dr. W. C. Sutton published such a case in the Nashville Journal of Medicine and Surgery, April, 1853. The infant at birth was apparently dead, but was resuscitated so as to live eighteen hours in a state of tetanic rigidity. In cases in which tetanus begins at birth, doubtless the cerebro-spinal axis is in some way affected; but in the absence of

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post-mortem examinations the exact nature of the lesion is uncertain. It is evident, therefore, that in this disease, as in eclampsia, the cause in different cases may be entirely distinct. Dr. James Johnson many years ago expressed his belief in the multiplicity of causes, and he had been a carefully intelligent observer in the West Indies. In conclusion, the causes may be arranged in two groups, one external, the other internal. In the first group should be placed imperfect ventilation, personal and domiciliary uncleanliness, and atmospheric vicissitudes; in the second group, so far as ascertained, inflammation of the umbilicus and umbilical vessels, meningitis, and, rarely, injury of cerebro-spinal axis during birth. The lesions resulting from tetanus infantum pertain chiefly to the circulatory system. In the cases examined by Professor Cederschjold, of Stockholm, the meningeal and cerebral vessels, and those of the spinal cord, the cavities of the heart, and the large vessels connected with the heart, were distended with blood. Dr. West says: "The most frequent post-mortem appearance in this disease, and that which I found in the bodies of all the children I examined, consists of effusion of blood, either fluid or coagulated, into the cellular tissue surrounding the theca of the cord. Conjoined with this there is generally a congested state of the vessels of the spinal arachnoid, and sometimes an effusion of blood or serum into its cavity. The signs of congestion about the head are less constant, though much oftener present than absent, and sometimes existing in an extreme degree; while in one instance I found not merely a highly congested state of the cerebral vessels, but also an effusion of blood, in considerable quantity, between the skull and dura mater, and also a slighter effusion into the arachnoid cavity." Dr. Weber, of Riel, also placed infants who had died of tetanus on their faces, and without exception found injection of the capillaries of the cords and spinal meninges, and extravasation of blood. In two cases exam-

ined by Dr. J. Lewis Smith there was intense injection of the cerebral meninges and of the meninges of the upper part of the spine, but no extravasation was noticed. The spinal canal was not opened. In a third case, in which it was opened, there was extravasation in addition to the congestion. This was especially observed along the spinal theca. Dr. H. O. Wooten (N. O. Med. and Surg. Jour., May, 1846) states that he has made several post-mortem examinations, and has found the pathological appearances as uniform as in any other disease, as follows: "Engorgement of the substance of the brain, and of the meninges lining the base of the brain, the medulla oblongata, and spinal marrow; liver congested." It is seen from the above observations that tetanus of the infant is ordinarily accompanied by great passive congestion, which is especially marked in the cerebro-spinal axis, and that frequently extravasations occur from the distended capillaries. The embarrassment of respiration and the retarded circulation of blood consequent on the tetanic rigidity afford sufficient explanation of this state of the vessels.

Symptoms.—In many cases premonitory symptoms are absent, or are so slight as to escape notice. Sometimes there is a degree of fretfulness previously, but no more than is often observed in those who continue in good health. The first symptoms which alarm the parents, and show the grave nature of the commencing disease, is inability to nurse, or evident pain and hesitation in nursing. Commencing with rigidity of the masseters, the disease gradually extends to the other voluntary muscles, and in the course of a few hours the muscles of the limbs, as well as of the trunk, are involved. Persistent muscular contraction, which is the pathognomonic feature of infantile tetanus, is developed, not fully in the beginning, but by degrees in each affected muscle, so that it is not till after the lapse of several hours, perhaps even a day, that the greatest amount of rigidity is attained. Therefore, in the commencement of the disease, the limbs

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can be bent and the jaws pressed open more readily than at a subsequent stage, though with manifest pain to the infant. During the period of maximum rigidity the jaws are fixed almost immovably, often with a little interspace between them, against which the tongue presses, and in which frothy saliva collects. The head is thrown backward and held in a fixed position by the stiffness of the cervical muscles. The fore-arms are flexed; the thumbs are thrown across the palms of the hands, and are firmly clenched by the fingers; the thighs are drawn towards the trunk; the great toes are adducted, and the other toes flexed. Occasionally opisthotonos results from the extreme contraction of the dorsal and posterior cervical muscles. The infant can sometimes be raised without any yielding of the muscles, by one hand under the occiput and the other under the heels. The rigidity is liable to variation in its intensity, even after the full development of the disease. If the infant is quiet, especially if asleep, the muscles are partially relaxed to such an extent, sometimes in the first stage of the complaint, that the features have a placid and natural expression, though only for a short time. There are frequent exacerbations in the muscular contraction, sometimes occurring without any apparent cause, and sometimes produced by any thing which excites or disturbs the child. Attempts to open the lips or jaws, or eyelids, or to bend the limbs, blowing on the face, or even the crawling of a fly upon it, occasions the paroxysm. The muscular movements which occur during spasms are sometimes described as clonic. There is, indeed, occasionally some quivering of the limbs, and yet, so far from the muscular action being a clonic spasm, it possesses a tonic character, which is at times intensified. In fatal cases the paroxysms occur more and more frequently until the period of collapse. The crying of the child affected by tetanus is never loud, however great the suffering. It is variously described by writers as "whimpering" or "whining." It is of this suppressed char-

acter in consequence of the rigid state of the respiratory muscles and their imperfect movement. The milk placed in its mouth is in great part pressed back through the violence of the spasm which is induced by the attempt to feed it.

The condition of the bowels is not uniform. They may be relaxed, particularly if the disease is due to some irritation in them. In other cases the stools are natural or constipated. According to Sir Henry Holland, one of the first symptoms which occurred in cases on the island of Heimacy was strabismus, with rolling of the eyes. If true, the proximate cause of the death in such cases would seem to be disease in the cerebro-spinal axis. Contraction of the pupils commonly occurs in the stage of collapse.

Mode of Death.—Death in infantile tetanus may occur from apnœa in the paroxysms, from extreme congestion of the cerebral vessels, apoplexy; and lastly, it may occur from exhaustion. The last mode is, probably, the most frequent.

Prognosis.—All writers, till recently, agree that tetanus of the infant rarely terminates favorably. Cullen attributes the ignorance of physicians in regard to this disease to the fact that it is so little amenable to treatment that they are not usually summoned to attend those affected with it. In the island of Heimacy, of one hundred and eighty-five cases occurring during a series of years, about the commencement of the present century, not one survived; and in the same locality, at a more recent period, according to the report of Dr. Schleisner, already alluded to, the mortality was sixty-four per cent. Similar statements in regard to its fatality are given by the physicians in the Southern States. Dr. H. C. Wooten, of Alabama, says (N. O. Med. Jour., May, 1846) that he has "never seen a decided case of tetanus nascentium that did not prove fatal, and that it is very generally deemed useless to call in medical aid after the initiatory symptoms are well declared." Dr. D. B. Nailer (N. O. Med. Jour., Nov., 1846) says: "About two-thirds of the deaths among the negro

children are from this disease, and so uniformly fatal is it that a physician is never sent for. My own experience and observation corroborate this opinion, and tend to prove its fearful mortality. I never saw a recovery." Yet Dr. J. Lewis Smith says death does not always result. Eight of the forty cases collected by him recovered, but a correct opinion can not be formed from this of the actual ratio of favorable to unfavorable cases, since favorable cases are much more likely to be published. In the history of these eight cases two interesting facts are noticed, which, when present, may serve as a ground for hope of a successful termination. These were the age at which the disease began, and fluctuation in the symptoms. With two exceptions, the infants who recovered were about a week old when the initiatory symptoms appeared, and there were fluctuations in the gravity of the symptoms; whereas fatal cases ordinarily grow progressively worse. Yet in favorable cases the symptoms are never so severe as they become in a few hours in those who succumb. From what has been said the duration will readily be inferred to be uncertain. It is commonly short. To one who has seen this disease in the new-born, or is familiar with its symptoms, diagnosis is easy. The symptoms which possess diagnostic value are more manifest and reliable than in most other infantile affections. Permanent rigidity of the voluntary muscles, with temporary exacerbations, such as have been mentioned, which are induced by any cause which disturbs the infant, as attempts to open the mouth or eyelids, is pathognomonic. In considering the treatment of this disease with medicinal agents, we must remember the great difficulty which the child experiences in swallowing. Without care, a considerable part of the dose is lost by the spasms of the muscles of deglutition which ordinarily occur when the spoon is placed in the mouth; so that, unless special attention is given to this matter, it is uncertain whether the prescribed quantity is fully administered. The treatment

employed by different physicians has been very diverse and unsatisfactory. Finckt states that whenever antiphlogistics were prescribed they did harm, and that the abstraction of blood, even in small quantities, aggravated the symptoms. The same results have followed depletory measures in the practice of other physicians. The internal remedies which have been most frequently prescribed are opiates and antispasmodics, but they are generally useless. When anæsthetics began to be employed in the treatment of diseases it was believed that they would be especially useful in cases of tetanus. Accordingly chloroform has been used in tetanus in the infant, with the effect of controlling the spasms during the time of its use, but without curing the disease. Anæsthetics certainly relieve the suffering of the infant, and on this account, even if they do not prolong life, their judicious employment seems proper. The remedy which, in my opinion, is far preferable to all others, is hydrate of chloral. Since the introduction of this agent into therapeutics it has been employed in the treatment of this disease with so good a result that it will probably supersede all other remedies for this purpose. The dose is one to three grains by the mouth, or, if there is great difficulty in swallowing, double the quantity by the rectum. Moreover, by the use of chloral the suffering of the child is greatly diminished. The administration of alcoholic stimulants is required at short intervals on account of the rapid emaciation and great prostration. Local treatment, directed to the umbilicus in those cases in which there is evidence of inflammation, should not be neglected. A warm foot-bath every few hours and stimulating lotions to the spine are useful.

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ART. III.—*Modern Treatment of Fractures.* By G. W. GARRISON, of Utica, Licking County, Ohio. Read before the Licking County Medical Society.

The subject assigned me at our last meeting, you will notice, reduces itself to one of a practical nature, and, of course, in a brief essay I must leave out all details as to old, and now disused, methods of treatment.

The word fracture means to break or divide, and we have several kinds of fractures that might be mentioned, such as

(1.) Simple fracture; that is, when the bone only is divided.

(2.) Compound fracture; that is, severing of the bone with a laceration of the soft structures communicating with the broken bone.

(3.) Comminuted; that is, where the bone is broken into several pieces.

(4.) Complicated; that is, the bone is not only broken, but there is lesion of some important vessel or nervous trunk.

Furthermore, fractures in regard to their direction are denominated transverse and oblique.

To hasten on to the treatment of these difficulties, I might add—

(1.) That the fracture must be adjusted or reduced.

(2.) That the severed bones must be retained in place.

(3.) That we must combat any symptoms that may arise.

The reduction of fractures is to be effected by extension, counter-extension, and coaptation.

The parts are kept in apposition by position, rest, and an appropriate apparatus.

The position must vary according to the kind of fracture to be treated, and, to digress somewhat, I would suggest that all broken members should be handled with the utmost care and caution; rude or awkward manipulations, by which needless pain is inflicted, are not simply acts of wanton cruelty, but they are causes very often of inflammation and its consequences. Then all handlings should be done tenderly,

and to assist your purpose, get your patients to understand before beginning that you will not give them any cruel treatment, or torture them by undue manipulations. Advise the patient to keep the broken limb in a passive state. Be very careful to enjoin this upon them, for any muscular action upon their part causes additional pain by moving the broken ends against each other, and by their rough, sharp extremities coming in contact with the soft tissues.

In regard to the position of the limb that is fractured, it must be placed at rest. If an upper limb, it may be laid in a pasteboard trough, to which are attached several cords to hold the arm suspended to the neck in a sling. If the lower limb, it may be placed in a horizontal or slightly elevated position in a state of extension, or on a double inclined plane.

In fractures of the upper extremities the patients may go about during treatment, but in those of the lower extremities they must submit to several weeks of quietude in bed.

The fractures that I purpose to call your attention more especially to are the following, viz.:

1. Fracture of the radius, known as Colles's fracture.
2. In the vicinity of the elbow-joint.
3. Of the neck of the humerus.
4. Of the arm or forearm.
5. Clavicle.
6. Neck of the femur.
7. Through the trochanter and above the knee.
8. Of the shaft of the femur.
9. Leg.
10. Patella.

In fractures of the radius known as Colles's or silver-fork fracture, the best appliance in my hands, after adjusting the break, and bandaging the hand-wrist and forearm, is the pistol-shaped splint to the outside of the arm and hand, and a straight splint to forearm up to the hand. By the use of

the pistol-shaped splint I am able to keep the hand and wrist in an extended position, and hold the hand at an acute angle to the ulna, then bandage the splints from the ends of the fingers to the elbow, and if the bandage is closely applied all of the deformity will be overcome; then put the arm in a sling, with the thumb looking upward, and the hand projecting beyond the sling. After three weeks I set up passive motion in the wrist-joint, and use pasteboard splints for a week or two, and remove all dressings in four or five weeks.

In treating a fracture in the vicinity of the elbow-joint, either above or below that joint, I usually bandage the arm and forearm entire, and apply a right-angled splint to the outside of the arm, with the thumb looking upward. Set up passive motion in three weeks, and remove all dressings in four weeks. If the fracture should be of the olecranon process, then the arm and forearm must be kept in a straight position, with a long anterior splint applied to the arm and forearm, and the process held in apposition by adhesive plasters, carried around the joint and over the splint in the form of the figure 8. Remove all dressings in two weeks, and begin passive motion in order to prevent anchylosis of the joint.

In fractures of the forearm, of either one or both bones, I use an anterior and posterior splint three-fourths the width of, and securely bandaged to, the forearm; put the arm in a sling the same as in Colles's fracture, as before described; re-dress the arm as circumstances indicate, should the dressings become too loose or tight; remove all dressings and splints in four weeks, and order gentle exercise of the limb. In fractures of the arm I use two small splints to the inside and anterior surface of the arm, and the right-angled grooved splint to the outside of the arm and forearm; apply a bandage to the whole arm, and re-dress as the case requires; remove all dressings in four weeks. In fractures of the neck

of the humerus, either surgical or anatomical, either impacted or non-impacted, intra-capsular or not, after restoring the limb, the most recent method of dressing the fracture is to apply a bandage to the entire arm; then use Welch's shoulder and arm splint, apply it to the outside of the arm and shoulder, and a leather-veneered splint to the inside of the arm; bandage both splints securely, and as you approach the shoulder let the bandage be carried over the prominence of the shoulder, in order to elevate the shoulder and keep the splint securely to the deltoid muscle. Remove all dressings in six weeks. In fracture of the clavicle the most modern treatment is, first, bring up the shoulder and reduce the deformity; second, retain the shoulder in this position, and thereby keep the broken bones in place. The first part of the procedure is easily effected by the surgeon's hands, but the second (that is, the retaining treatment) is the most important to both patient and doctor. Among the many different kinds of treatment which I have resorted to in army and civil practice, there is none in my hands so successful as the Fox method, with Hamilton's and Sayre's, all three in part used to every fracture, and I will try and give the dressing for an ordinary case of fractured clavicle. To retain the bone in situ, first use a wedge-shaped pad, with two strings three feet long, one at the front and the other at the back of the pad; elevate the shoulder well and put this pad well up into the axilla; tie one string to a collar (that has been made to accurately fit the sound shoulder to the back part, and the front string of the wedge carried forward over the chest and tied to the collar in front). This will hold the wedge in situ. Then, to hold the arm backward, cut a piece of canvas adhesive plaster about one yard long by three inches wide, and pass this around the arm about two-thirds of its length above the elbow, and attach it to the opposite side of the chest. Then to elevate the shoulder use the front part of an old dress sleeve and run the forearm through that, and have strings attached to it long enough to reach the collar, and

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tie these in this ring so that the weight of the arm will be made to rest in this sling, and draw the elbow well back. Then if there should be some displacement of the bones still use a compress over the broken ends, and retain it there by strong strips of adhesive plasters passing over the break, and each end secured to the back and chest. This last I would especially enjoin in children. In five weeks remove all dressings.

I will next speak of fracture of the patella. In the treatment of this difficulty the limb should be laid on a single inclined plane, in order to relax the quadriceps femoris muscles, and the foot should be secured to the distal end of the splint by bandages. The severed fragments should be brought together and secured there by adhesive plasters passing around the knee in the form of a figure eight, and these plasters should be made to pass around the splint also. Keep patient on his back for five weeks, and then perhaps you will have ligamentous union.

I will now take up the other fractures of the lower extremities, and the first one to consider is fracture of the neck of the femur. The dressing most applicable here is a bandage to the entire limb, to keep the muscles at rest and obviate any spasmodic action. I should have said first apply several strips of adhesive plaster to the leg, for the purpose of extension, and then the roller. After bandaging, lay the limb in a box three inches wider than the leg, and well padded posteriorly; restore the limb to its former shape by adjusting the fracture; then to the outside of the limb put a small sack filled with dry sand, extending from the crest of the illium to the plantar surface of the foot; also two others, one from the perineum to the condyle of the femur, and the other from the condyle of the tibia to the sole of the foot. The body is to be kept on a plane with the broken leg, and extension effected by weights carried over the foot-board of the bed, where there is a pulley fastened, and this extension to be kept up on the same plane with the limb.

In fractures through the trochanter or upper end of the femur, or just above the knee-joint, the most successful plan of treatment is the double inclined plane. The reason for treating fractures in this vicinity on the double inclined plane would suggest itself to any anatomist; and in order to substantiate this view I would refer you to the surgical anatomy of these parts by Gray in his text-book on anatomy, page 355, second American edition. The inclination of the plane must be in proportion to the amount of the separation of the broken bone.

Now, as regards fractures of the shaft of the femur, the best plan is to adjust the break first; bandage the limb entire; use the same box as suggested in fractures of the neck; then apply three leather-veneered splints to the thigh, extending from trochanter to the condyle of the femur. Apply the first one to the outside of the thigh; second one apply to the anterior surface, and third one to the inside of the limb; and these must be well padded, and secured by a bandage running from the knee to the pelvis. Extension is effected by adhesive straps, and the same pulley arrangements as described in fracture of the neck, where the limb is resting in the box above suggested. Lay your sand-bags along its entire length.

In fractures of the leg, first, apply adhesive straps for extension, and bandage the leg up to the knee; second, apply three leather-veneered splints to the limb—one outside, one anteriorly, and one inside; and these to be secured with a bandage. Lay the leg in a box similar to the one for broken femurs, only let it extend about three inches beyond the knee, and apply sand-bags to steady the broken member, as described in fracture of the thigh, etc. Extension also effected in the same way. Then, in all cases of fractures of the lower limbs, you must get up a fracture-bed, in order to have some way for your patient to evacuate the bowels and urinate without disturbing the break. A great many plans have

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been suggested. The best consists in letting the patient's bed be made on a mattress, with a movable piece or block of the mattress cut out where the pelvis comes, and have a piece to snugly fit this opening; and when the patient wishes to evacuate the bowels remove this block and set the stool-pot underneath. This will answer the purpose, at the same time the break is undisturbed. After eight weeks let your patient get up.

You will observe, gentlemen, that I have said nothing commendable of the starch or plaster of Paris bandages or dressings, for the simple reason I have tried them in primary dressings to my heart's dissatisfaction, and all I can say for them is that they make a good dressing, after the union has taken place and the splints have been removed, to prevent any accident to the break.

In closing this hasty paper on fractures I have not said any thing about compound, complicated, or comminuted fractures, for the reason that our essays must occupy only fifteen minutes in reading, and I feel that I have only given you very imperfect hints in such a brief time on this important subject, that authors have devoted several hundred pages to. Then to sum up: when called to treat a fracture, by all means have a good, honest man called to your counsel during the early treatment of the case, for there is always danger of more or less dissatisfaction when you dismiss your case; and if you have a good understanding at the outset it will materially aid you in after explanations of the deformities which follow such accidents. Give your patients to understand that they must expect some shortening of a leg, and, if in the vicinity of a joint, anchylosis. When a case recovers with some deformity they are liable to see other practitioners about the treatment of their case. And right here, gentlemen, we are all to blame in a measure; we are liable to give censure where none is deserved, and by understanding all the circumstances in connection with the case throughout

we would not give any opinion, except that it was the best result that could be expected under the circumstances. I would add still further, give your patient all the attention possible, and don't neglect to visit him frequently, and the less money in the case the more you must be on your guard, or else you will be accused of neglect of duty in not giving the necessary visits to the case.

ART. IV.—*Anæmia of the Brain and its Membranes.* By Dr. JOHN C. PETERS, of New York, President of the Medical Society of the County of New York; President of the New York Neurological Society; Vice-President of the Public Health Association of New York, etc.

Anæmia of the brain and its membranes is, according to Dr. J. S. Steiner, relatively frequent in infancy, appearing as the result of numerous acute and chronic diseases, the principal of which are exhausting diseases, like profuse diarrhœa, gastro enteritis, follicular enteritis, dysentery, etc., all arising from unsuitable or insufficient nourishment, and, of course, more frequent in artificially fed children. It may also result from severe typhoid fever, or in rapidly-growing children, or from loss of blood. From its resemblance to acute hydrocephalus it was called hydrocephaloid by Marshall Hall. It is very common in the course of exhausting diseases, for the brain of course then partakes of the general impoverishment of the blood. There are marked paleness, pinched features, wrinkled forehead, with a prominence of the frontal and temporal veins, and the whole skin of the head is loose. The anterior fontanelle is depressed, the parietal bones overlap the frontal, producing a terrace-like projection, and the hair is scant and dry. There is generally great restlessness of the head, a constant moving of it about, accompanied by distortion of the features and frequent rubbing of the face and head with the hands, and plucking at the hair, eyelashes, ears, and nose; symptoms which are often wrongly referred to worms or inflammation of the

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brain. The eyelids are generally only half open, and the pupils dilated; great restlessness from want of nutrition of the brain and nerves, afterward with apathy from exhaustion. Sleep is short, and the child wakes up from it with wide, glaring eyes, but soon relapses into broken slumber. Contractions of the upper, with spasmodic movements of the lower limbs, together with occasional stiffening of the whole body, are common symptoms. Sudden and repeated watery vomitings, constipation, and sometimes diarrhœa, continue up to death. The abdomen is generally distended, doughy, and tender, with the skin wrinkled and in folds. The blood-vessels of the meninges are thin and collapsed, and contain only a small quantity of pale blood; and clear, serous fluid is often found in the sub-arachnoid cellular tissue. The brain is generally small and soft; the gray substance is pale, and passes over into the white without any sharp demarkation. There is often fatty degeneration of the neuroglia, and of the capillary blood-vessels.

Anæmia of the Brain.—The ventricles may be of normal size, but are often more or less distended with fluid. The whole substance shows few or no blood points on its cut surface, and is of milk-white color. The choroid plexuses are strikingly pale, and the sinuses of the dura mater contain but little blood, or generally a pale, fibrinous clot.

When caused by diarrhœa and summer complaint, the first indication is to check the discharges with bismuth and iron, and give small quantities of milk-punch with soda, and improve the nourishment of the child at once. When softening of the brain and passive dropsy are suspected, tonic diuretics, like the muriatic tincture, or ethereal tincture of the acetate of iron, are required. In some cases the disease runs a rapid but well-marked course in a few days, but generally is more protracted, and sometimes yields to the above treatment. It is generally the more grave the younger the child, but even in the worst cases it is not hopeless, for the infant-

ile system, when judiciously treated, often revives marvelously.

When cerebral anæmia occurs as a sequel of typhoid fever, children who, previous to the attack, had normal mental acuteness and good memories, become forgetful and feeble-minded; the expression of their faces loses intelligence, and they look imbecile; their replies to questions consist of a meaningless smile, and they often take delight in childish amusements. Fortunately, these mental changes are generally transient, if good food and a moderate quantity of wine, spirits, and iron be given. The aromatic spirits of ammonia, the aqua ammonia anisatæ are good in their place, and musk is useful. Beef-tea, pounded raw meat, and wine administered liberally are almost essential.

Cerebral anæmia sometimes occurs in rapidly-growing children, especially between the ages of seven and ten years. It lessens their mental powers, makes their disposition peevish, produces frequent headache, giddiness, and mental hallucination, unquiet sleep, with grinding of the teeth. But quinine, iron, ale, wine, strong and easily digested food, milk-punch, and residence in the country will generally produce a rapid restoration.

Partial cerebral anæmia generally arises from tumors of the brain or thrombosis.

Cerebral Anæmia.—Jones and Sieveking say that anæmia of the brain is a condition of considerable importance, and one that is the cause of numerous morbid states. Where it exists the brain presents a generally pallid appearance, and especially the white matter is remarkably deficient in red spots, and more dead-white than normally. It is an important element in the diseases termed white softening and œdema of the brain, which may, in their turn, give rise to apoplectic effusion.

It will at once be seen that anæmia of the brain must be accompanied by fullness of the serous and lymphatic chan-

nels; that is, by a great abundance of fluid, both within the cerebral cavities, and generally filtrated through the brain substance round the vessels; and hence the condition may easily become one of œdema, and, in its extreme form, one of white softening.

Anæmia, cerebral, according to Hammond, in adults, is owing either to the blood in the brain being reduced below the normal standard, from hæmorrhage, deficient action of the heart, impaired nutrition, or to some cause preventing due access of blood to the brain, such as spasm of the vessels, or tumors, or it may arise from impoverishment of the blood, as in the cachexiæ, etc.

In cerebral anæmia, suddenly induced from profuse hæmorrhage, the most prominent symptom is syncope; vertigo is a general attendant, and there are paleness of the features and coldness of the extremities. The pulse is frequent, thread-like, weak, and the respiration is feeble and accelerated.

When the accession is more gradual, anæmic headache is very generally present, usually confined to a limited portion of the head, with a feeling of constriction, especially across the brows. The vertigo is notably increased on rising from the recumbent posture, and is as troublesome a feature as in most attacks of cerebral congestion. There is ringing in the ears, and loud noises are painful and exceedingly irritating to the nervous system. The pupils are largely dilated and sluggish, contracting slowly on exposure to strong light. When one eye is thus affected needless alarm is often excited. The retinæ are sensitive and opthalmic examination painful; the vessels at the fundus of the eye are small and straight, and the choroid paler than normal. The face is pale, lips colorless, and the skin cold and clammy. Nausea and vomiting are present in extreme cases, and epileptoid convulsions may occur, when sudden spasm of the cerebral vessels is also added. Feebleness of muscular power is always

met with, and there may be general or partial paralysis, with anæsthesia, coldness, formication, pins and needles. In extreme cases the patient is insensible; in less severe forms there may be mental lassitude, or low delirium, and when the nerves are greatly irritated, extreme mental irritability.

Hallucinations and delusions are common in the slowly developed forms of cerebral anæmia. In all cases there is more or less drowsiness, from the profound syncope of the rapid form to mere languor in slight cases. In medium cases the patient readily falls asleep in the sitting posture, but becomes wakeful in the recumbent, as the quantity of blood in the brain is thus suddenly increased.

The cardiac, arterial, and venous murmurs of anæmia are generally present, and are sometimes heard by the patient, apparently in the head, and are then very annoying.

Gooch's cerebral hydrocephaloid anæmia in young children from exhausting diseases, especially diarrhœa, is well known and often mistaken for acute congestive hydrocephalus. The drowsiness is well marked, the head cool, the pulse small and weak, the features pinched, the pupils large and insensible to light, the fontanella,.if still open, are depressed.

Exhausting hæmorrhages are a very common cause; also, exhausting discharges, such as diarrhœa, dysentery, and long-continued purulent flows. Pressure or obliteration of the arteries supplying the brain, and chronic spasm of them. Excessive mental exertion produces, first, cerebral congestion, and finally exhaustion, also great fear or shock.

Tobacco, antimony, oxide of zinc, and the bromides cause cerebral anæmia. Insufficient food, from starvation or dyspepsia, is a common cause.

It is most likely to be confounded with cerebral congestion, but there is drowsiness, not wakefulness, the pupils are dilated, not contracted, the pain is limited to one part of the head instead of being general, as in congestion, and it and the vertigo are increased in the erect position, and lessened

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by lying down. Finally, the effect of tonics and stimulants in mitigating the symptoms will be decisive. Compressing the carotids in the healthy subject causes dimness of sight, stupor, weakness of the legs, staggering, swooning, and sudden falling down, or there is a humming in the ears, tingling over the body, and in a few seconds complete unconsciousness and insensibility supervene, preceded by pallor of the face, dilatation of the pupils, and headache. Diminution in the number of red corpuscles produces similar symptoms. Spasm of the vessels from irritation of the vaso-motor nerves explains the origin and continuance of many cases of cerebral anæmia.

Alcohol must be given in very small doses at first. The carbonate and aromatic spirits of ammonia are useful. Gentian, colombo, and quassia are often required, and quinine may be given afterwards. When iron disagrees, manganese may be substituted. Hammond has given five-grain doses of the sulphate with excellent results. But food is the most important factor in relieving cerebral anæmia, and the recumbent position is often imperative. Small doses of opium are very useful.

Dr. Edward Long Fox (Pathological Anatomy of the Nervous Centers, page 52) says cerebral anæmia is often dependent entirely upon general anæmia, or upon plugging of the vessels, or from pressure of tumors or abscesses, when white softening may occur, or it may be general over the whole brain from deficient heart action. There may be general pallor of the brain, and extreme whiteness of the white matter, or some atrophy of the whole organ, with compensatory increase of cerebro-spinal fluid. The whole brain may resemble that which obtains in chronic senile dementia, or the atrophy may occur in spots when the interference with the blood-supply has not been complete. When it occurs at the surface of the brain, the depression caused by the atrophy will be filled in by fluid.

Cerebral anæmia may be caused by inanition, dyspepsia, or by drains on the system. Venous stasis, such as may be

met with in aggravated cases of heart disease, must impede arterial circulation. It may be produced by mental emotion or shock; and finally the presence of an excess of the products of waste of tissue in the blood may deprive the brain of its proper supply of good blood.

[The next number will contain an article by Dr. Peters on Partial Cerebral Anæmia.]

ART. V.—*Dermoid Cysts of the Ovary.* A paper read by ROBERT STONE, M.D., before the Yonkers Medical Society November 3, 1876.

In 1858 Lebert published in the Prague Quarterly for Practical Medicine, Vol. 60, some extracts from his first work, and there designated, under the title "Dermoid Cysts," those sacculated tumors which contain one or more of the component parts of the skin, and in which are also met cartilage, bone, teeth, nerve matter, and complete nerves in rare cases, and smooth, muscular fiber. To Lebert belongs the credit of suggesting this brief and descriptive title. Leblanc, however, in an essay published in 1831, speaks of a dermoid cyst at the basis of the cranium of a horse. Kohlrausch in 1843 gave an extremely exact description of the microscopic condition of formations of this character, in which he distinctly points out the analogy of the same to the skin; and Steinlin, of Zurich, says, in an excellent treatise published in 1850: "The fundamental change in fatty cysts of the ovary consists in the production of a tissue which is completely similar to the skin, and the contents of the cyst correspond with the secretions of the skin and its epithelial formations." From this description to the title dermoid cyst is but a step.

Dermoid cysts have generally a thin-walled cystic membrane, and the internal surface is usually smooth, but at times uneven through circumscribed elevations, and presents, either throughout or only at certain points, a cutis-like structure. The outer layer of the internal membrane consists of

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thick layers of pavement epithelium [ciliated epithelium has thus far been observed in a few cases only]; next of non-nucleated, scaly elements, upon which follow nucleated and finally rounded cells, precisely as in the outer skin. Beneath this is seen a cutis-like layer of connective tissue, whose surface, bordering on the epidermis, at times grows into papilla, which, however, never present the natural, regular formation in rows, and which usually present also irregularities in length and thickness. The connective tissue also is looser, and its fibers here and there separate to embrace fatty tissues. In this envelope, which so completely resembles the cutis, we often meet with the completed attributes of the latter. The dermoid points are frequently hairy. The hair arises from a distinct hair follicle, into which sebaceous glands open, generally near the upper end of the follicle. Besides these sebaceous glands, which are often of great size, one-third to one-half to one millimetre and over in length, and which are connected with the hair follicles, there are others which open directly upon the inner surface of the cyst. Besides sebaceous glands, sudoriparous glands are also met with. Since Kohlrausch, who first observed them, many others have confirmed their presence.

Many dermoid cysts of the ovary contain within their walls cartilage, and less often bone and teeth, and at times condylomata. Dermoid cysts are filled with a soft, grayish or yellowish butter, or hardened, fat-like matter, with which are frequently mingled balls of matted hair. The microscope shows free fat, broken down pavement epithelium, free nuclei, fatty, degenerated epithelium, and crystals of cholesterine; the last in such masses as to give the whole a glittering appearance. The hairs present the greatest variety in thickness; at times they are free, at others attached to the walls of the cyst at various angles. Their color does not generally correspond with that of the head and pubes. Andral observed in an ovario-dermoid cyst in a negress hair

of a delicate, reddish yellow, and of the fineness of a white infant's hair. The same cyst may contain hairs of different colors, and even the same hair may present different colors in itself. The length of the hairs is very variable. The longest noticed by Andral was six inches long. Regnaud observed them over one foot; Busch, sixteen inches; Thiebaud, twenty inches, and Tyson two and three-fourths feet long. Generally, however, the hairs are short; one to two inches, or even shorter.

Authors agree, in general, that blonde or reddish hairs are most frequent in ovario-dermoid cysts.

Teeth, more or less developed, are not infrequently met with in these cysts. In the one hundred and twenty-nine cases collected by Lebert, sixty-three contained teeth; and in two hundred and forty-five cases reported by Pauly, forty-six contained teeth. The case reported by Ploucquet, and subsequently more minutely described by Authenrieth, is celebrated. From the right ovary, weighing over twenty pounds, of a woman aged twenty-two, who had never borne children, over three hundred teeth were removed, and this was hardly the half of the number present. Schnabel found over one hundred in a cyst from a young girl of thirteen years old, who had not yet menstruated.

Bone has also been met with, as well in the walls as in the interior of these cysts. Heschl describes several pieces of bone which were connected by a false joint, formed of periosteum and tough fibrous tissue. The bony matter is truly osseous, viz., it presents a medullary canal and concentric layers, only, according to Klob, the bone corpuscles are rather larger and fewer than in normal bone. Dermoid cysts have also, at times, been found to contain nerve fibers and ganglionic cells, which correspond more or less with the cerebral matter. Virchow found in one case a nerve mass similar to the cerebellum. Rokitansky observed in one case an independent nervous apparatus, arising from a ganglion in the

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interior of an ovarial cyst, which was provided with a dermoid covering. The reddish ganglionic mass lay next the base of the bony mass in a capsular space in the cyst wall. The nerve branches emanating from the ganglionic mass branched out into the bony growth to its extremities like the nerves of the fingers, and gave off branches also to the dermoid covering of the cyst. Not less interesting is a case reported by Friedreichs, of Würzburg, who found at the post-mortem of a woman aged thirty-eight, who had died of Bright's disease, in the left ovary a tumor of the size of an orange, composed of two cysts. One of these cysts was dermoid. Large, thick bands of broad, double-sheathed nerve fibers at one point, at another a whitish layer of parallel, thin varicose nerve fibers, mingled with large uni or bipolar, and more or less pigmented, very friable, ganglionic cells, with large round nuclei, interspersed with a fine capillary net-work, and held together by a delicate but distinct neuroglia. Such, in brief, is Fredreich's report. Other recent observers have reported the presence of nerve fibers in ovario-dermoid cysts. Axel Key observed the following case, which is of some interest: At the post-mortem of a woman aged sixty-eight, who had suffered from habitual constipation, and for the last six years from abdominal pains, and periodical attacks of cold rigors, Key found a dermoid cyst of the ovary of the size of a man's head. A microscopic examination of the inner surface presented a cutis-like structure; the papillæ, however, absent, but sebaceous and sudoriparous glands were evident. From the side of the inner wall there extended a soft mass, hardly four inches long, which resembled an abortive fœtus. It had a rounded, convex side, which corresponded to the back; bone, teeth, and nerve tissue were present. The nerve tissue was found in a bony cavity, which, says Key, may be regarded as a sort of cranium.

The nerve matter in these cases is almost invariably connected with the walls of the cyst, and from thence projects

into its interior. It is, in fact, doubtful whether nerve fibers and ganglionic cells occur, independently, in the cavity of these dermoid cysts. Most authors mention striated muscular fiber as also occurring in these cysts, the authority resting upon Virchow (Deutsche Klinik, 1859). Pauly (on Ovarian Dermoid Cysts, 1875) is of the opinion that the cyst in question, said to contain striped muscular fiber, although in fact containing a neoplasm of that character, was not itself a true dermoid cyst; indeed, Virchow, in his second case (reported in the Transactions of the Physico-Medical Society of Würzburg, 1859), designates the cyst as a myosarcoma. Smooth muscular fiber has been found in these dermoid cysts, referred to by Virchow as errectores pili. As to the occurrence of *nails* in the ovario-dermoid cysts, Benda, in his dissertation, "De Ovariorum Degeneratione," 1844, writes: "Nails have also been found, at times, in dermoid cysts." Lebert, "Traite d'Anatomie," says: "In two cases there was observed a horny substance, which, in one of the two, had a cylindrical form, resembling the nails." Cruveilhier, in his Atlas, No. XVIII., fig. 3, gives an ovario-dermoid cyst which presents two horny tubes. If, indeed, nails are found in these cysts, they must be regarded as exceedingly rare. Finally, it may be added that in dermoid cysts in cows, sheep, and in birds, hair, wool, and feathers respectively have been observed.

Ovario-dermoid cysts are generally simple; or almost always but one cyst is contained in each circumscribed tumor. Serous and colloid cysts may also be combined with them. Lebert reports this combination in 17 cases. The combination of colloid cysts with dermoids in the ovary has long been observed; so frequently, that Autenrieth, in his Archives, vol. 7, 1807, asserts that bone and teeth are found only when a brown, limpid gelatine, or when a whitish and gradually toughening mucous is present in the cyst, which may well be termed colloid. Autenrieth deduces therefrom that this oc-

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curs as in the normal formation of bone and teeth, since all normal bone arises from hardened gelatinous material. The teeth, however, arise in sacculi filled with fluid or thickened gelatinous matter. Virchow adds: "We may most probably infer from the frequent occurrence of this accidental formation that the presence of the latter in the ovary excites the colloid degeneration of the same."

Pauly, contrary to the views of Lebert, does not regard the ovary itself as the most frequent location of dermoid cysts. For, although Lebert in 188 cases of dermoid cysts found 129 ovario-dermoid, it is certainly because the ovario-dermoid cyst is more generally described than the more frequent dermoid in the sub-cutaneous tissue. As to the especial preference towards the right ovary, as deduced by Lebert from his statistics, Pauly's cases do not bear out the assertion. Lebert found in 64 cases, where the diseased side was mentioned, the disease occurred in the right 39 times, the left 19, in both 6 times. Other authors differ in their opinions as to the liability of the disease to affect one side or the other in preference. Bose says: "It is, nevertheless, wonderful that especially in the left ovary such hairs are met with." Josephi says: "According to my observations, the disease affects the right as frequently as the left ovary." Hochrichter decides for the left ovary, and to this opinion Rohr also subscribes. Kehrer says: "It is not yet physiologically decided, in women, why the left ovary is more often affected than the right. Hein found, out of 16 cases of tubular and ovarian pregnancies, in more than 10 cases the left side attacked. In 245 cases of dermoid cysts of the ovary, Pauly found in 117 cases the side affected mentioned—the right in 52, the left in 45, and in 20 cases both sides involved. Comparing the cases collected by Lebert and by Pauly, not one of the cases collected by the latter being included on Lebert's table, Pauly found the disease in the right 39; the left, 19; in both ovaries, 6 times. Lebert found the disease in the right 52; in the left 45; in both

ovaries, 20 times. Pauly regards the occurrence on either side as accidental, and believes it impossible to find a physiological cause for the predilection of the disease for either side.

Some authors have further laid especial stress upon the assertion that ovario-dermoid cysts occur more frequently in the unmarried or the married and childless females. Baker Brown (1862) asserts its recurrence especially in the unmarried, and in the largest number of cases where the disease occurs in the married, it happens in those who had remained unfruitful—a remark which Churchill controverts. Pauly gives 118 cases where the question was noted whether the patient was married or unmarried; of these 49 were unmarried and 69 married. Of these 69 only a few cases are noted childless, the number not exceeding 5. But, on the other hand, in many of the cases the more exact annotation is absent as to whether children had followed the marriage or not. On the other hand, we find in 34 cases children are noted, even as many as 9 living children in one case, and 11 in another. Tilt, in the London Gazette, September, 1851, gives an interesting table which is apropos of the question in hand. He collects the observations of Lee, Cheran, Bluff, and his own, and finds chronic ovarian affections in 290 cases in married women, and 167 cases in unmarried. The origin of dermoid cysts of the ovary is a question whose solution has occupied the acutist minds in past and present times. The opinions regarding these cysts among earlier writers have been most varied, certainly no vague theory of the middle ages will appear overdrawn or romantic, when we remember that within a generation Velpeau himself, before his assembled clinic, on introducing a young man of 27 years, from whom he had removed some four months before, an exactly diagnosed dermoid cyst from the scrotum, gave this resume. The fistulous opening which the cyst presented externally may be nothing less than the anus of the fœtus, the yellowish green mass in the extirpated cyst meconium. The bones which he found within

the cyst he regarded as corresponding, the first with the scapula, humerus, and clavicle; the second presenting a doubt between the ilium and sacrum, and the third corresponding with developed fragments of the vertebral canal.

The first report of a dermoid cyst of the ovary occurs in a work by Johannes Scultetus, Nuremberg, 1659. These cases were in ancient times attributed to malefic influences, and the devil was always supposed to have had a hand in their production. A more harmless view was certainly that which attributed these growths as a punishment for sin. In fact, the case is related of a man named Ludwig Roosel, of Flanders, who, after making sport of his wife's labor-pains, was attacked with a swelling on the right femur, which, after persisting for nine months, ruptured and gave issue to a male fœtus. We learn from this account at least that among the judgments of Heaven upon man pregnancy was attributed under certain circumstances, and, also, that dermoid cysts have been baptized as products of conception. In a catalogue issued in the year 1728, "The Breslau Collection," is to be found, under artcle 17, "The wonderful remains of the blighted product of impregnation which was carried for 20 years." At that time the dermoid cysts of the ovary were regarded as the remains of a fœtus. Astruc was of the opinion that a previous coitus was needed for their production. An ovum, with its membranes, is retained in the ovary until it becomes steatomatous, while the hair, which is less destructible, retains a species of growth like the hair in the dead body, which is capable of a certain growth. Later on—a sign of advancing knowlege—further pathological and anatomical causes were sought for this still wonderful formation. Beginning with Josephi, professor of anatomy, etc., in Rostock, we are presented with seven varieties of possibilities which might lead to ovarian pregnancies, that is, to ovario-dermoid cysts.

1. The outer membrane of the ovary is too firmly attached, or is diseased.

2. The graafian vesicles do not all protrude equally from

the cellular tissue of the ovary. If one deeper seated is impregnated it can hardly reach the Fallopian tube, and ovarian pregnancy results.

3. Fear, anger, annoyance, etc., which about the time of, or at the instant of, impregnation suddenly interrupts the orgasm, by which the highly excited condition of the nervous system is so changed that the entrance and reception of the ovum into the tube is prevented. Josephi here cites Krüger, who says (Dissertatio Pathologica Ovarii Mulierum, Göttingen, 1782): "Illicit cohabitations may be the cause and source of this evil, where, namely, the woman allows the man intercourse indeed, but in the midst of the connection, from fear of impregnation and consequent disgrace, withdraws herself, and seeks to render the act null."

4. The tube is too long or too short, and is not able fully to reach the ovary.

5. The tube is abnormally adherent to adjacent parts, so that its freedom of action is impeded or lost.

6. In diseased conditions of the tubes, where they are contracted, ulcerated, paralyzed, etc.

7. When the dentated wall either fails entirely, or where the fimbriæ are not sufficiently long, or are otherwise affected, as by serous or other tumors. One of the oldest views accounting for the presence of the hair in these cysts is, that the hair in the dermoid cysts had been swallowed by the patient, and finally found its way into the cyst. Cheston Browne (Pathological Inquiries) believed that the teeth found in these cysts had been swallowed by the patient, but that the hair was grown in sitû. Meckel is of the opinion that in young maids, as well as at times in older women, and especially in old maids, these formations may occur without previous coitus, especially in those cases where the ovaries or the uterus of old maids is the seat, partly because their moral virginity does not always keep pace with the physical, and partly because their generative organs are especially dis-

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posed toward irregular formations, and partly because it is not known at what period the cyst commenced. Within certain limits it is possible to assume a lucina sine concubita, a view upon which Cruveilhier remarks: "This ingenious theory is purely hypothetical, and rests upon no positive facts." But Meckel adds expressly: "It is not possible in every case to reach its signification;" hence we must accede to the possibility of extra uterine pregnancy, a view against which Meckel previously adduced the strongest arguments. This view, presented by such an authority as Meckel, was received by most of his contemporaries. Others held the dermoid cysts as products of fruitful connection, followed by degeneration of the ovum, and named these tumors "Hair-moles." Cruveilhier and Bricheteau, and with them many others, regarded as possible two modes of origin of dermoid cysts, according as they were observed in adults or in children. Cruveilhier says: "A uterine conception takes place; an adherence is established, during the first period of the conception, between the walls of the cyst and the embryo. Whereupon a more or less complete disintegration follows. Only the skin remains, and as we have the skin, we have a ground for the production of hair, thence hair cysts. If portions of the maxilla or other parts of the skeleton are found, these have escaped the general destruction. But Cruveilhier himself feels that his theory does not fit the cases of young maids and men. Then the hair cyst is the débris of a fœtus, contemporary with the individual in whom it occurs. Tumiata adopted this latter view, because the normal structure of the parts proves that they can not develop irregularly or by chance, but must be produced from germs originally present. Furgusson appears to assent to this view when he says in the earlier fœtal existence nature is arrested in order to fully develop the second fœtus.

It is, indeed, necessary to reach a satisfactory theory on this subject, especially in the interest of virgins. According

to the old theory, if by chance a dermoid cyst of the ovary perforates a neighboring organ, and a portion of its contents passes out externally, the unfortunate patient, however innocent, would be at once brought to shame. Spencer Wells relates an interesting case to which he was called, and where he found the family plunged in shame and sorrow over their unfortunate daughter, because she had passed several portions of bone per annum. We thus see that the theory of extra-uterine pregnancy in these cases works its evil influence even in our day.

Recently Klebs had given his assent to the view that we have in these cases a fœtal inclusion, which owes its origin to a splitting of the germ. The merging of the one ovum into the other occurs before the formation of the allantois; hence the fœtal parts are seated immediately upon the cyst wall. In the 4th edition of his work, issued last year, Klebs, however, returns to the views held by most authors of to-day.

Aliqui, in the Gazette des Hospitaux, No. 58, 1857, reports a case of a considerable tumor, composed of ten embryonic sacs-dermoid cysts of both ovaries, in a woman aged forty-nine, four cysts on the right and six on the left, and finally lays down the following laws regarding this, as he says, "apparently repeated intra-ovarian pregnancy": The impregnation of the ovule in the ovary is possible through the investing membrane. The intra-ovarian pregnancy may be repeated many times—in this case, ten times. The separation of the ovule is not necessarily connected with menstruation. Pelikan, especially, combats Rokitansky's views, and seeks an explanation in the further development of the numerous embryonic elements in the connective tissue of the ovary. Where the basis of the different development of the originally similar elements lies, "is, nevertheless," says Pelikan, "entirely obscure." Steinlin, of Zürich, who had an opportunity of investigating ovario-dermoid cysts in a fresh state, writes as follows regarding their origin: "As the first foundation

of a fatty cyst, we find in the ovary, at the point of a graafian vesicle, a small, flesh-like tubercle, about the size of a hempseed, which is with some difficulty removed from its cyst, and which I regard as the original sac of the graafian follicle. Later on this small tubercle becomes loosened from the sac as far as the point where it is attached to the sac by a broad pedicle. At this spot vessels enter, which are dispersed through the tubercle in loops. The sac remains every where close-fitting, and the intermediate space is recognized only as a fine fissure. Somewhat later this space is filled with a thin layer, and we find also that the sebaceous glands have developed.

The explanation of the bony formations in these ovariodermoid cysts presents greater difficulties. Ritchie attacks Steinlin's essay at this particular point, and rests his views on the fact that these bony matters found in the ovary present true osseous structure under the microscope, while bony formations in the skin of crustaceous animals are nothing more than thickened epidermis and calcareous deposits. Ritchie also asserts the hypothesis, with Baillie, Meckel, and Voigtel, that every dermoid cyst of the ovary is an ovum, which has passed through a certain gradation of development, and is a perverse attempt at pathogenesis. Elsewhere he says: "Nature, failing to make a complete fœtus, does the best under the circumstances, and may thus produce teeth, bone, and hair, which we may regard as animal vegetations." Von der Porten* says the principal facts militate against the view that the teratomo is a product of sexual engendering. It is demonstrated, by undoubted observations, that even the unimpregnated egg, under certain modes of breeding, takes on appreciable changes, which entirely agree with the laws which we gather from the transplanting of sexless sprouts in the lower organisms. The investigations of Hen-

* In his work on Teratoma, 1873.

sen, on the breeding of unimpregnated eggs, have made it certain that the protoplasm of these eggs is in a condition to bifurcate, and to put out prolongations which may become filaments of half a millimeter and over. "The volume of these filaments," says Hensen, further, "is so great that the original ovular mass is decidedly insufficient to cover the same. In this case there must be an accretion of substance." "If," continues Von der Porten, "we grant such an activity of the unimpregnated egg, why should it not proceed further to the formation of differential cells, of tissues, and even of organs?" Lebert seeks to explain the matter by his law of "Plastic Heterotopics," which reads thus: "That simple or compound tissues, and even the most complicated organs, may be formed in parts of the body where, in the normal state, they are not to be met with." Still this "heterotopic-plastic" law brings us really no nearer a solution of the matter. Henschl, who has carefully studied the nature and formation of dermoid cysts, says: "As to the formation of ovarian or scrotal dermoid cysts, it is wisest, at present, to withhold a decided opinion. That they originally belong to intra-uterine life appears to me exceedingly probable; from what elements, however, they are generated is as yet entirely unknown." The actual solution of this question has entirely too many pretended answers for any one to be reliable.

Mayweg (Bonn, 1868) says: "Other authors regard dermoid cysts as proceeding from changes in the epithelium, and in the theca folliculi graafiani, and assert that they are simple retention cysts—a view which I approve, because the ovum is not necessary to the formation of the dermoid cysts; because, also, the expression 'generated' does not solve the question; and, finally, because, with a given mucous membrane provided with such an indifferent epithelium as that of the graafian vesicle, every thing is granted necessary to the formation of hair, teeth," etc. Waldeyer resumes this view as follows: "The epithelial cells of the ovary are capa-

ble of producing, in the usual manner of partition and subdivision, other partitive products, as is elsewhere the rule in cell subdivision, in which the off-pring cell bears the same characteristics as its maternal cell. This essential capacity of the ovarian epithelium is comprehensible through the fact that the ovarian epithelium, en masse and singly, must be regarded as undeveloped germinative cells. If an increase of the inclosed ovarian epithelium occurs in the ordinary way, then we have, in most cases, a colloid cyst, while the proliferation in question produces, with the anomalous products of development, a dermoid cystoma. In the same manner as the sub cutaneous dermoid cysts are developed by simple involution of the skin, we may assume a like mode of formation for the much deeper-seated ovarial dermoid cysts, except that here the closure of the abdominal cavity during fœtal life comes into consideration, especially since His (Archives of Microscopic Anatomy, 1865), by his investigations, has incontestably proved that the urinary and genital passages are formed, not, as has until now been assumed, by a contraction of the middle, but from the outer germinal fold.

Pidoux, in the Transactions of the Academy of Medicine, Paris, 1857, assumes a special crasis, peculiar to these ovarian cysts, which he calls the ovario-cystic diathesis. This is so far a local process that it occurs in the ovary only. One and the same cyst may gradually assume the most varied forms and characters, which otherwise might be regarded as cysts of a differing nature. It remains to add a reference to that view regarding the formation of ovario-dermoid cysts, which appears to be very general, which refer their genesis to a segmentation at the period of embryonic development, as Remak supposes, in the cases of cholesteatomata, and Thiersch in dermoid cysts.

These cysts, says Pauly, have been compared, to use an appropriate simile of Heschl's (and not only the sub-cutaneous, but also those deeper seated), to the chance formations of

geologists, *si magnis licet componere parva*, which have broken loose from the cliffs, whose composition they resemble, and from which they proceed, and are carried to a greater or less distance, being thus as much foundlings as the dermoid cysts in question. Pauly agrees with Von der Porten that this aberration theory entirely precludes the possibility of metastasis, a view which has the weighty authority of Virchow, and cites a mediastinal teratoma, which formed "metastasis" in the liver and kidneys, as well as a case observed in 1873, at the Berlin Pathological Institute, in which, after the extirpation of a simple cystoma of the scrotum, after about three months a so-called "secondary" teratoma of one of the retro-peritoneal lymphatic glands, containing cartilage, bone, and muscular tissue, was developed. It can not be denied, however, that some points of this aberration theory remain thus far unexplained; for example, the presence of products of the middle germinative fold. But, on the other hand, it greatly depends whether these parts of the middle germinative layer are to be regarded as true neoplasms, that is, belonging to the cyst, or as merely lying in the walls, that is, represent formations derived from the maternal layer. The absence of any derivatives from the intestinal layer is a matter of surprise only when we regard the dermoid cyst as the lowest stage of a fœtus in fœtu, while it is self-evident, if it be regarded as a product of the outer germinal fold, and its capsule, formed by the middle germinative layer, be regarded, as in so many like cases, as a product of irritation.

In adopting the above theories we must regard ovario-dermoid cysts as congenital. It is no stretch of imagination to assume that a person may go about for years unconscious that through some embryonic mishap, or some uterine irregularity, she carries the germs of a tumor, and that suddenly, from some favoring external cause, the development of the same is hastened and favored. According to most authors, the period of puberty, or of marriage, is the predisposing

cause. It appears that, in a large number of the cases reported, at the period of puberty, or on the occasion of marriage, the patient began her first complaints. Pregnancy may also be mentioned as an essentially predisposing cause. Lebert has published in his essay in the Prague Quarterly, vol. 60, a table on the age of his patients, numbering in all 129 cases. It is evident, however, that all such statistics must be regarded as problematical. The larger proportion of the published cases have not come under the observer's notice until after the death of the patient, and in by no means every case, where a post-mortem reveals a dermoid cyst of the ovary, is the latter even the predisposing cause of death. These statistics are of value only as pointing out the extremes of age at which these cysts may appear; and here we might find a strong proof that dermoid cysts are congenital if they are found in very young children, and even in the fœtus. The extremes in the age of such patients teach us how long such a dangerous germ may lie unperceived and undeveloped, when, in such cases, the predisposing cause of further development of the germs fails to present itself, or when the latter has not succeeded earlier in undermining the patient's health.

We may here mention also an observation suggested by Prof. Freünd, of Breslau, viz., the status infantilis of the genitals with ovario-dermoid cysts. As soon as this point has been noticed more precisely in a larger number of cases—even intra-vitam as far as the investigation is possible—we shall be better able to come to a decided conclusion. The great majority of reported cases are obscure on this point. In the following cases the condition of the genital organs is noticed: Baillie's Philosophical Transactions, Vol. I., 1789, reports the cases of two girls, the one of 12½ years; the other of 19, where, besides the intact hymen, the presence of which was considered of great importance under the prevalence of the extra graviditas theory, it is especially mentioned that

the womb was smaller than usual. Meckel says, in Vol. II. of his "Pathological Anatomy": "In external tumors of this kind, which are attached to a pedicle [the author here refers to ovario-dermoids exclusively] the uterus is much smaller than normal." The case of a woman, aged 40, previously described by Meckel, belongs to this category also. Spencer Wells refers to an unmarried patient, aged 18 years, operated on August 1, 1870, who presented a dermoid cyst of the right ovary, where the uterus and left ovary were barely developed. To the above belongs also the case of Hodgkin (Catalogue of the preparations in the Anatomical Museum of Guy's Hospital, Section 8, 1823), and one of Brodie's, in a woman aged 27. The same in cases from Brüch and Pelikan; the cases are, however, not very minutely reported. In May, 1874, Pauly had the opportunity of observing a patient, aged about 40 years, in Freünd's clinic, with an ovario-dermoid cyst, which presented a striking status infantilis, as regards the genital organs.

ORIGINAL LECTURES.

ART. VI.—*A Lecture on the Precautionary Management of Communicable Diseases.* By FESSENDEN N. OTIS, M.D., Clinical Professor in the College of Physicians and Surgeons and Visiting Surgeon to Charity Hospital, New York.

The word communicable in this relation is intended to embrace all diseases which are capable of being transferred from one human being to another, either by contagion or by infection. Although these terms are used, in a general way, to express the same meaning, it seems to be desirable, for convenience of classification, to concede to them their original and natural significance, viz., to limit the term CON-

TAGION to diseases which are communicable only by direct contact with the disease itself, or through materials which have been subjected to such contact, and to apply the term INFECTIOUS to diseases which are capable of communication through the medium of the atmosphere by inhalation.

One of the chief responsibilities in the care of individuals suffering or afflicted with any communicable disease, is in the prevention of its spread to healthy persons. It is in the province of the physician to instruct in this matter when cases are brought to his notice, but it often occurs that contagious disease exists without such marked discomfort as would seem to necessitate professional aid; hence it becomes desirable for all who are entrusted with the personal care of the sick to be able to recognize the early invasion of communicable diseases, and to know how best to neutralize the contagious element, both for their own protection and for that of others more or less exposed. We shall first consider the local contagious diseases—diseases of the skin—as follows:

Scabies—pediculi of various kinds.

Tinea, or Ring-worm—of various kinds.

Porrigo—favus, or scald-head.

Pityriasis—or liver-spot.

These are all dependent upon parasites, scabies and pediculi being animal organisms, and the remainder due to vegetable growths. In general terms, all pimples and itching eruptions should be suspected as capable of being communicated, and the individual suffering be kept from contact with others, and from using in common any articles of dress or the toilet, until the opinion of a physician can be obtained. Scabies, or itch, is due to the presence of an insect which burrows under the epidermis, or scarf skin. It is especially active at night, and, as a consequence, the irritation which it causes is greatly increased at this time, and, besides, it is then more apt to be communicated, either by

direct contact with a person affected or through the medium of the bed clothes.

The clothing of the affected person should be kept carefully separated when such disease is known or suspected; that which has been in recent use should be subjected to a baking process, or thoroughly boiled, in order to destroy the insect and its larvæ which may have been entangled in folds of the garments or bedding, or in the texture of the material. This care should be kept up until a proper treatment shall have thoroughly freed the individual from the presence of the insect. It will be in the province of the nurse, also, to recognize the presence of pediculi—vulgarly known as head and body lice—which not unfrequently produce symptoms and appearances similar to those of scabies, and which may be contracted through the medium of public houses and conveyances, and in other ways, even by children and adults of cleanly and refined habits. The treatment of the clothing in such cases should be the same as for scabies, and a lotion of the officinal *tinctura delphini* freely applied will prove an effectual insectiside.

Where they are localized on the body, an ointment of ung. hydrargyri ammoniati, or white precipitate, will be more effectual. Tinea, or ring-worm, is due to a vegetable parasite, which has its origin from a similar disease in animals. Thus it may be acquired from cats or dogs, and also from cattle, as well as from contact with human beings afflicted with ring-worm. The knowledge of this method of acquiring the disease would have prevented the spread of it through an entire family, including an infant of three weeks, mother, and nurse in attendance, as occurred in a family subsequently under my care, and where the disease was distinctly traced to a pet black and tan terrier suffering with the "mange." The appearance of a circular or crescentic scaling spot of eruption should receive prompt attention. Every precaution should be used to prevent contact

with the spot, either on the part of a patient or others, and the notice of a physician at once be attracted to it.

Sycosis, mentagra, or barber's itch, is of the same nature, but is confined to the face of adult males. It presents the general appearance of aggravated cold sores. It is related of this disease, acquired by a man from a cow, that the eruption in the beard was a true sycosis, while on the skin adjoining it had all the appearance of the ordinary ring-worm. It is most frequently communicated from one human being to another through the operation of using shaving apparatus in common. It should be borne in mind that contact with such faces, especially by children, is likely to produce ring-worm. There is still another contagious disease communicated from animals, called porrigo, favus, or scald-head. This occurs usually on the heads of children as a light-yellow cup-shaped pustule, and when at all extensive it has a distinct mousey smell, and it is supposed to originate in mice. Authentic instances are related where a mouse has given it to a cat, from the cat transferred to a dog, and thence to a child, etc. A knowledge of the possibility of contagion from such sources will often be sufficient to prevent acquirement of the disease.

The ring-worm commences as a red spot, covered with fine bran-like scales. As the spot enlarges the color gets fainter in the center, so that it soon comes to look like a ring, inclosing healthy skin, sometimes increasing to a diameter of four or five inches. Often fading out at one or more points, the ring becomes imperfect, presenting, perhaps, the crescentic form, or, growing upon others, produces figures of 8 and other gyrate forms. They are most often seen upon the face, neck, or arms. Of the same nature is a red scaling patch which sometimes appears on the inner upper aspect of the thigh, and frequently as large as one's hand. Again it is found upon the head, especially on children, causing a circum-

scribed loss of hair. All these forms of tinea are caused by the same parasite—a vegetable spore called the *trichophyton.*

The last and least important in the list of parasitic diseases is Pityriasis, or Liver-spot. This is a copper-colored eruption, chiefly of the body—occurs in small spots and patches, covered with fine branny scales. It is not usually the cause of much annoyance, except from its unsightliness. The best preventive of contagion is a free application of 10 per cent. solution of salicilic acid.

We shall next consider contagious diseases of mucous membranes. These are leucorrhœa, simple and specific, ophthalmia, syphilis. Leucorrhœas are inflammations of mucous membranes, vaginal or uterine, dependent upon various causes, and characterized by a purulent or muco-purulent discharge. This may be profuse, and yet unattended with any appreciable degree of irritation. In such cases the presence of a *contagium* is very rare; but where it is characterized by *heat and pain,* whatever its source of origin, it may, and is quite likely to, have acquired a contagious element, and thus have the power to communicate a similar grade of inflammation to any healthy mucous membrane with which it may be brought into contact. By the term *simple* contagious leucorrhœa is to be understood an ordinary idiopathic, or self-generated leucorrhœa, which by various influences has been so intensified that it has acquired the contagious property. The term *specific* leucorrhœa is applied to those acquired by contagion.

The varied character which the simple leucorrhœa may acquire, is best appreciated by the observation of causes of the infantile leucorrhœa which is seen in young girls, and even in infants, and originating from an irritation in the contiguous structures of the rectum, from the pressure of ascarides, or pin-worms. The discharge becomes profuse, and of a greenish yellow hue, indications of a high grade of inflammation. The irritation caused by its passage over the

external parts is often such as to excoriate the mucous membrane. The application of it by means of sponges, towels, etc., to the parts of other and healthy children, will at once set up a similar inflammation, and a drop, even an infinitesimal molecule, of the discharge being conveyed to the conjunctiva, the mucous membrane of the eye, will set up a purulent ophthalmia, which may go on, if not properly arrested, to the entire destruction of sight within three or four days. It will then at once be seen that the utmost care is necessary in the management of such, and of all cases of inflammatory diseases of mucous membranes. The care of children afflicted with leucorrhœa is one of the greatest responsibility. In cleansing the parts, the use of sponges should be avoided, and pledgets of cotton (which has previously been boiled, to free it from greasy particles, and make it more readily absorptive) should be used. This should be wound around little wooden sticks (a match will answer very well), and after use be at once cast into the fire. Soft cotton or linen rags may be used the same way, but no articles which have been used in washing or wiping the diseased mucous surfaces should be used a second time. In all cases, previous to bringing *any* material in contact with the inflamed parts, they should be gently irrigated with warm or tepid water by means of a syringe. In the cleansing of clothes stained by the discharge, the danger of handling them should be borne in mind. They should be carefully separated from those of other members of the family and soaked in water, to which a small quantity of crude carbolic acid (say three drachms to the gallon of water) has been previously added. They may then be cleansed and boiled in the usual way. The care of children afflicted with purulent discharges of the mucous membrane of the eye should be equally exacting; as this latter affection is more especially in the province of Dr. Pooley, who is to instruct you in the manner of nursing, in diseases of the eye, I will not go more fully into the mode of caring for such cases. I now come to the

consideration of the most important of the contagious diseases of mucous membranes—Syphilitic disease. This is different in its nature from any yet spoken of. All the other diseases mentioned are of purely local origin: this is a constitutional disease, one of the local manifestations of which, is found in mucous membranes. It originates in a local lesion, the result of inoculation of the *contagium* of syphilis. This is believed to be a human germinal cell, which has, in some mysterious way, acquired the power of gaining access to the human organism, and by rapid proliferation or increase in the system, and by a highly contagious property with which it is invested, to vitiate the blood of the individual affected, imparting to it all the contagious and vicious properties of the original cell from which it was derived. During the active stage of this disease, which lasts for many months, all its products are highly contagious. One of these is a peculiar superficial erosion, or ulceration, of the mucous membrane of the mouth. It may occupy an extensive surface, and it *may* not be larger than a pin's head, and yet when it is present it is capable of furnishing a *contagium* or contagious principle which, if brought in contact with an abrasion in a healthy person, will set up a disease of the same kind in the person so inoculated. It is not necessary that the lesion in the mouth shall come in contact with the abrasion; the diseased germ may be transferred from the diseased to the healthy through the medium of a spoon or a pen-handle, or even (as has been known and recorded) of a stick of candy. It is, then, necessary to use the greatest circumspection in the care of persons known or suspected to suffering from syphilitic disease. In a special manner in the care of children affected with syphilis, hereditary or acquired, is care to be exercised with regard to this form of lesion. It has, in numerous recorded instances, been communicated by a kiss and by toys which were used by children in common.

All open sores or abrasions, especially about the mucous

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orifices of the body, in the persons of the syphilitic, may be reckoned capable of furnishing a contagious principle, and hence the same rules in regard to cleansing and dressing which were given in the matter of specific leucorrhœa holds equally in the case of syphilitic disease. A circumspection in regard to the different modes by which syphilis may be communicated should be exercised, which should be vigilant and constant, and continue during the entire active stages of the disease.

Prominent among the diseases resulting from a local contagion is Pyæmia, or pus absorption; the result of a pernicious influence upon open wounds or abraded surfaces, induced either by some unhealthy condition arising in the person of the sufferer, or by contact of wounds and suppurating surfaces, or an atmosphere impregnated with the emanations from pyæmic patients, or by contact with sponges, dressings, etc., or the fingers of attendants, professional and lay, that may have been in contact with the pyæmic *contagium*. It may also be set up from the influence of erysipelas, the *contagium* of which is known to be capable of inducing pyæmia. In addition, then, to the care which you will exercise (in view of the grave character of the pyæmic accident) in insisting upon the most rigid application of rules laid down in regard to dressings, utensils, etc., in other contagious diseases, the *hands* should be submitted to a thorough disinfection by washing in water, to which the tincture of iodine has been added, sufficient to color it deeply, say a teaspoonful to a quart of water,* or a forty-grain solution of carbolic acid. The salicilic acid is lauded for its property of destroying living organisms, and also the products of decomposition. The ten-grain solution, which has the advantage of being free from odor, is powerful to remove all smells arising from decompositions which are not associated with sul-

* London Lancet, June 12, 1875, page 829.

phureted hydrogen. Least of all should it be forgotten that the influence of an erysipelas may determine an attack of pyæmia; and, if possible, all attendance upon patients with open wounds by one attending upon a case of erysipelas should be prohibited entirely. At least no contact should take place, except after the most scrupulous disinfection.

We have also another grave malady of local origin, viz, Septicæmia, or blood poisoning. This, in cases of wounds and open suppurating surfaces, is considered due to the absorption of putrid or decomposing animal matter, blood clots, tissue shreds, etc., from other wounds, or any decomposing animal material. It is the result of direct contact of such matter to the wound or other open lesion, or through particles of the contagion which are in the air. The septicæmic action once set up, from whatever source, a new focus of contagion is established, requiring as complete isolation of the patient as possible, and the disinfectants before spoken of in pyæmic trouble should be brought into play. Both of these diseases are liable to attack recently confined women, either from some local predisposition or condition, or from a contagion brought by the persons in attendance from cases similarly affected.

The fact that both septicæmia and pyæmia may be communicated to a recently confined woman by a person who has been in contact with similar diseases, and also by contact with erysipelas or other unhealthy inflammations, should be fully appreciated by all in charge of puerperal cases, and especially by the professional nurse.

In this connection, also, it will be in order to speak of Puerperal Fever, which by some is a generic term, used to express all inflammatory accidents occurring after child-birth, but which by others is esteemed a distinct disease, both infectious and contagious, of a most deadly nature, and hence is capable of being transmitted through fomites or infected materials, such as the clothes of persons who have been in

attendance on puerperal-fever cases. Dr. Fordyce Barker, who maintains the individuality of puerperal fever and its infectious as well as its contagious character, cites an instance from Dr. Holmes:* "A midwife delivered a woman in December, 1830, who died soon after with Puerperal Fever. In one month from this date the same woman delivered thirty women, residing in different parts of an extensive suburb, of which number sixteen caught the disease, and all died. The other midwives, connected with the same charitable institution as the woman already mentioned, are twenty-five in number, and deliver on an average ninety a week, or about three hundred and sixty per month. None of these women had any puerperal fever. Yet all this time this woman was crossing the other midwives in every direction—in the very same quarters where her cases of fever were happening."

In view, then, of the deadly nature of the diseases known as pyæmia, septiæmia, and puerperal fever, and the possibility of their communication from the diseased to the healthy by the hand, or through the presence of the nurse, the terrible responsibility resting upon her, after attendance upon such cases, also including cases of erysipelas, will be appreciated, and every means that is known to science should be eagerly sought and applied. In addition, then, to all the care and local disinfection previously spoken of, the clothes of the nurse in such cases, even the shoes and the hair and under the finger nails, should be thoroughly disinfected, and the body bathed in a disinfecting solution before contact with other puerperal cases. The clothes, if woolen, should be exposed to a heat of 200 to 250° Fahrenheit, and all washable garments should be soaked in a 40 per cent. solution of carbolic acid, and afterward washed in the usual way. Exposure of the person to an atmosphere in a close room in which a few scales of iodine have been burned is said to disinfect

* Barker on the Puerperal Diseases, page 465.

promptly and effectually.* And further, it is a duty to allow as much time to elapse and as much contact with the outside air, before taking charge of new puerperal cases, as is possible, and never less than one or two months in cases of well-determined puerperal fever.

Erysipelas may be communicated through the medium of bed-clothes and bedding to healthy persons. The bedding in all cases of contagious and infectious diseases should be of straw, and at once burned after use. It should be changed once a week, at least, during the continuance of the disease.

Diphtheria.—This, when once established, is a contagious disease, and the contagion may collect in a room where persons have been ill with it through lack of proper ventilation and disinfection, so that months after the disease may be communicated thereby to healthy persons occupying the apartment. The disease is confined to mucous membranes, or open wounds or abrasions, and is supposed by recent observers to be the result of an evolution of minute vegetable organisms, producing the local manifestations, and these, reacting in some way upon the mass of the circulaton, produce the systemic poisoning. What chiefly concerns us at this time is the known contagious property of diphtheria. It is acquired chiefly, if not solely, by contact with the secretions of the mucous membranes, which are the subject of the disease. A rigid separation of children or adults affected with it from all not required for their care is essential; and a thorough application of disinfectants to all materials used for applying medication, or in wiping off the diseased spots, must be made. Solutions of chlorine and saturated solution of the salicilic acid (which is shown to possess a special power in destroying animal or vegetable organisms) give promise of being of great service in preventing contagion from this disease. The time required for the development of

* Dr. Williams in Lancet, June 12, 1875, p. 329.

diphtheria after exposure is laid down by Oertel* as from two to five days, and he instances two cases where the disease was communicated by kissing, in which it appeared in two days subsequent to the exposure.

Typhoid fever, cholera, and dysentery have in common a limited contagious element. Conclusions from the most complete and recent investigations in regard to the origin and mode of propagation of these diseases would warrant the belief that it is through the dejecta or alvine discharges, and in the discharges from the bowels *alone*, that the contagious element is transmitted; and, further, that it is not in the *fresh* discharges that the contagium is present, but that a process of fermentation is necessary to its development, which requires some time. The chief care, then, to prevent the spread of these diseases is to be exercised in thoroughly disinfecting the alvine discharges immediately that they are evacuated, and also to subject to the same process all utensils or materials of bedding and clothing that have been in contact with the excreta. This is most easily and thoroughly done by having constantly standing in the vessels used for the reception of such excreta a sufficient quantity of saturated solution of the sulphate of iron to cover the same, or to sprinkle freely the powdered sulphate over the recent discharge, and to wash the clothes or other materials stained by it with the solution as soon as may be after soiling, and also to use a weak solution of the same in washing the hands of the attendant after each exposure. Beyond this, and attention to free ventilation of the rooms which the patient inhabits, nothing farther will be required to prevent the spread of these diseases.

PART SECOND.

Infectious diseases, or those which may be acquired through the medium of the atmosphere by inhalation. A word in regard to their origin.

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* Zeimssen Practice, vol. 1, p. 595.

There are two classes of causes that have been claimed for infectious diseases. The one is in the nature of a zymotic action or ferment, and therefore due to chemical changes; the other due to the generation of living organisms, thus claiming a vital nature. The vital theory of the infectious principle, the *contagium vivum*, is held at the present day by the majority of recent investigators. Now, in order to present most forcibly the measures necessary to be pursued in combating the influence of the infectious principle, it will be well, it appears to me, to spend a few moments making you intelligent in the matter of the accepted mode of their development and propagation. Investigations conducted through the aid of the microscope have shown that the lowest forms of animal and vegetable organisms are quite similar in appearance and behavior. The living organisms, then, which have been found associated with the contagious secretions and emanations of infectious diseases are not in this way determined to be certainly of animal or vegetable origin; but, while the question in regard to some varieties is still unsettled, the weight of evidence seems to be in favor of the claim made by Lionel S. Beale and others, that they are degraded forms of living matter derived from the human organism. In all cases the disease germ is shown to be a living particle, varying in size from 1–3000 to 100–1000 of an inch in diameter. The white blood corpuscle, which is the integral type of the healthy human germinal matter, is 1–300 of an inch in diameter. It is a jelly-like particle, capable of movement, of transporting itself by stretching out a portion in a given direction, and drawing the residue onward in this manner. It is capable of absorbing non-living material, by surrounding it, incorporating it into its substance, growing thereby. It is capable of multiplication by sending out processes, which, becoming detached by a vital movement, assume at once all the powers and properties of the original granule. The disease germ, it is claimed, is

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thus propagated in the individual, the subject of an infective disease, until the entire mass of the circulation is vitiated. The property of contagion or infection being conceded to such particles, it becomes important to consider their power of movement, and the means by which they may be transferred from an individual in whom they have been developed to healthy persons. Mr. Beale says of these living particles, "that they may transport themselves from place to place; they may insinuate themselves through the narrowest aperture, or creep through very minute fissures and channels; they may climb through water, *and there is even reason to think they may move upward through perfectly still air*, by virtue of their capacity for vital movement." This inherent power being recognized, and the minute proportion of the disease germ being borne in mind, as well as capacity of infinite and swift multiplication, it is easy to see how diseases dependent upon the induction of a vital *contagium* may be carried into the circulation of a previously healthy or a predisposed organism.

The emanations from the lungs, from the skin, and from the excreta of a person, the subject of a truly infectious disease, become the media through which disease germs are communicated to the air, and, through it, to persons and materials, contiguous as well as in contact, bedding, furniture, floors, walls, ceilings, in some cases clothes, *even through them*, and possibly to distant apartments and places. There are, fortunately, great differences in the activity and vitality of disease germs of different diseases. With the mild forms of infectious disease are associated disease germs whose influence in disturbing the economy is small, and power of infection is weak and limited. Among these are measles, whooping-cough, mumps, roseola, and varicella, or chicken-pox. These would seem only to require free exposure of the clothes and person to the open air to prevent transferrence of these diseases to the healthy. In the case of small-pox, the *contagium*

is capable of being disseminated, not only from actual contact with the person suffering, but with the clothing and all the materials, bedding, furniture, etc., which have been in relation with such person, but may be wafted through the atmosphere to surrounding houses and places, and be taken into the system of an unprotected person by inhalation. A thorough system of disinfection and ventilation must be insisted on, and an absolute system of quarantine be maintained during the prevalence of this disease. The protection of the nurse in such cases becomes a matter of the first importance, and this may be effected in such cases by *vaccination.* To illustrate the perfect protection which this inestimable boon to humanity is capable of conferring, I will cite a personal experience. Twenty-five years ago, while I was in charge of the small-pox hospitals, which were at that time dependencies of this, the Charity Hospital, it was my habit to subject myself to the simple operation of vaccination every two or three weeks, when fresh matter could be obtained. In conducting a post-mortem examination on a patient recently dead of confluent small-pox, I accidentally thrust a needle through the integumen from beneath, which, passing through a large pustule, entered my right fore-finger (being left-handed), and penetrated to the depth of fully one-third of an inch.

After sucking the wound, no further attention was paid to it until the soreness drew attention to a papule, which gradually increased for a few days, and terminated in a single, well-developed, and characterestic small-pox pustule. This soon declined, and was all the effect, local or general, which resulted from the accident; thus demonstrating the completeness of the protection which the vaccination is capable of affording when the thoroughness of the vaccination is proven. It would, then, be my advice to you always, when called to minister to a case of small-pox, to insist upon a vaccination as the preliminary step, and to neglect no opportu-

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nity for re-vaccination during the continuance of your attendance. In case you are already thoroughly protected (and this can never be ascertained, even if you have had varioloid or the natural small-pox, without trial), no harm or inconvenience beyond a trifling pimple no larger than a musquito bite can occur from vaccination with the pure, humanized or the bovine virus; while, if only partially protected, as by an old attack of the disease, or by a vaccination in childhood, you may receive the disease in its confluent form. If only a varioloid results, and this confined to only a few pustules, even these are capable of transmitting the disease in its worst form to persons not protected.

Scarlatina, or Scarlet Fever, is a highly contagious and infectious disease, which may be acquired through contact with the skin, and through the exfoliations of the skin, which are characteristic of this disease. The contagious element of scarlet fever is one of the most stable and tenacious of all the infectious poisons.

It is believed to reside chiefly, if not wholly, in the epithelial scales, which are cast from the skin, and which, in different degrees of pulverulence, are distributed from the person suffering from, and more particularly during convalesence in, scarlet fever. These may exist as scales, or even exfoliations, so large that they represent the cast of a great portion of the hand, and so small that the fine dust of the exfoliation may float through the atmosphere unperceived by the naked eye, and yet, in either shape, it may retain its contagious property undiminished for months, even years. Heldebrand, as reported by Watson, was infected by a cloak, which, after exposure to the disease, had been put aside for eighteen months. A strip of flannel has been known to be the medium of contagion after the lapse of a year. (Reynolds.) It will, then, be seen that nothing short of the complete destruction of the exfoliated particles will afford protection against contagion.

1. To avoid contagion is the necessity of establishing a

strict quarantine. This must be perfect, or it is quite useless, and a perfect quarantine is almost impossible in private families. Even the passage of an attendant through a hall used in common may result in the distribution of the *contagium:* the fine, invisible particles cling to the hair and dress, and are easily shaken off during locomotion. Fortunately they settle after a time, and become secreted out of the way of contact. The free exposure to the open air soon rids a person of it who has not been long exposed, but one attending upon cases constantly, for a long time, as in the case of nurses, requires thorough disinfection of clothes and person, not forgetting the hair and finger-nails. The furniture of rooms occupied by scarlet fever patients should (as with all contagious and infectious diseases) be as smooth, and scant, and free from hiding crypts as possible, and be subjected to frequent airings during the progress of the disease; and for protection against cold, a second room should be prepared, to which, during airing, the patient should be moved, otherwise ample protection by blankets should be secured. On the subsidence of the exfoliation (which should not be considered as complete while the least amount of branny scurf can be rubbed off) the patient may be dressed in clean clothes, and permitted entrance to the rest of the house. This, in sèvere cases, will not be under a couple of months. The room should then be fumigated by means of placing a small roll of sulphur in an iron vessel, and setting it on fire, closing the room tightly, and allowing it to be burned out. All the bedding and clothing should be either burnt, baked, or boiled, and then thoroughly aired. Through this and such thorough expurgation alone can the premises be certainly made safe for the residence of children unprotected from the influence of the disease by a previous attack. The small doses of belladonna recommended for prevention of scarlet fever have, probably, no value.

Relapsing Fever, and Typhus Fever.—These highly contagious

forms of fever seem to be transmitted from one person to another by a *contagium* which is so subtle that it has, until recently, eluded the search of the most careful observers. In the case of relapsing fever, or recurring typhus, a minute animal organism has been found in the blood, and constantly associated with its invasion and recurrence, the parasite rapidly disappearing on convalescence. The development and spread of the disease is believed to depend upon these minute disease germs, and to be communicated by contact, or through the medium of an atmosphere more or less impregnated with them. Typhus and typho-bilious fevers are accepted by recent authorities to depend for their origin upon a living disease germ, but the actual demonstration is not yet accomplished; yet in the prevention of infection its presence is assumed, and those means which are found most effectual in causing the destruction of the known minute living disease germs are used to destroy the contagium of typhus and other pernicious fevers.

A few general rules may be laid down, which will be applicable in all cases of infectious fever. Contagious disease germs, it will be remembered, are minute living organisms, and so light that they may be supported by the air, and even carried long distances in a living state. "The breath of the sick person, there is reason to think, in many cases is loaded with contagious germs. There is little doubt that the cutaneous exhalation contains them. It is, therefore, of the utmost importance that means should be taken to destroy these particles before they can leave the neighborhood of the sick person or the sick-room. At the same time it is certain that of healthy persons exposed to the influence of these germs, by far the greater majority will escape infection; and observation and experience justify the conclusion that nurses and attendants really run little risk of contracting contagious fevers from the patient, unless they are themselves out of health. A healthy nurse, who takes the ordinary precautions

for keeping herself in good health, may be continually exposed to contagion, and devote her life to the service of the sick without being once attacked. But this is no reason for relaxing, in the slightest degree, our efforts to extinguish contagious or infectious poisons, and the greatest precaution should, in all cases, be taken to destroy all contagious disease germs as soon as possible after they come into existence." *

One of the most important measures for this purpose is to secure free and complete ventilation, and a frequent entire change of air in the apartments used by the sick. Contact with the oxygen of the air produces the combustion of the organism to a very great extent, and if sufficient oxygen could be supplied, and brought in contact with the disease germ, it is probable that no other means would be necessary, but the air alone will rarely afford sufficient for this purpose, and from the fact that the germs are often hidden in the folds and texture of garments, and bed furniture. When free access of air is impossible, it becomes necessary to use additional measures.

First, to dispense as far as possible with all hiding places, such as carpets, curtains, and woolens of every description. Second, to secure the most scrupulous cleanliness of the persons of the patient and attendants, and of apartments, and of all clothing and utensils. Permitting access of none but the necessary attendants, who should be as few as possible, and should communicate as little as possible with other persons.

All the food and drink which has been brought into the sick-room should be consumed by none but the sick, or the attendants, and no clothes should be carried out of the sick-room until they have undergone a thorough disinfection. This may be most readily accomplished by first soaking them in a solution of carbolic acid, ½ ounce to the gallon of water.

* Beale, Disease Germs, The Nature and Origin. Second Edition. London, 1872. Page 262.

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The *excreta* of the patient should also be at once disinfected, by throwing into the vessel a handful of finely powdered charcoal and bruised sulphate of iron. Where the discharge from the bowels are passed unconsciously, or without control of the patient, a cushion of powdered charcoal may be placed underneath; this will absorb and disinfect at once, freeing from all disagreeable odor. The vapor of tar has a decided power in destroying disease germs. A vessel of water with a little tar poured on it, and set on the grate or over a spirit-lamp, will prove a valuable adjunct in disinfecting persons and apartments. After the occupation of rooms by persons sick with contagious or infectious diseases, a thorough and efficient washing of the floors and ceilings should be insisted on, and the fumes of sulphuric acid gas be set free in them, by burning a few lumps of roll sulphur in an iron vessel, the doors and windows having been previously sealed by pasting paper over the crevices, and letting it remain for twenty-four hours. A more troublesome, but still more efficient mode, is that lately adopted by Professor Doremus, in disinfecting the infected wards of Bellevue Hospital, viz., that of setting free large volumes of chlorine gas. The black oxide of manganese and common salt were mixed to a consistence of thick mud, and placed on vessels made of sheet-lead; the vessels were then filled with the strong sulphuric acid of commerce, and the fumes of the chlorine were then rapidly evolved. The effect of this proceeding was to eradicate thoroughly all the germs of disease with which the wards had become saturated, as shown by the fact that, in their subsequent occupation, no contagious element was found to remain. In the above proceeding, it is necessary to leave the room promptly, in order to avoid the inhalation of the acid fumes of the chlorine, and also for the same reason to prevent access to the rooms for at least twenty-four hours. Free inhalation of the concentrated fumes of chlorine gas would prove promptly poisonous. With reasonable care, however, this process

may be effected without danger, but should only be attempted by those familiar with all the responsibilities of this mode of procedure.

A word now in regard to the *personnel* of nurses entrusted with the care of persons suffering from communicable diseases. All garments worn should, as far as possible, be of *washable* material, and the dress should be made "*gored*," and otherwise as free as possible from tucks and folds. Every pucker is a possible hiding place for disease germs, which thus kept from contact with the air may retain life and be carried until (if not destroyed by baking, or other efficient means) it finds a favorable soil for its development, in persons perhaps miles away. All unnecessary articles of dress should be avoided, remembering that each may become the focus of infection, and no nurse should visit, outside the sick-room, without changing her entire dress, for that which has been in no way exposed to the influence of the infection. The hair in an especial manner should receive the most careful attention, for by itself it is a rare hiding place, and when supplemented, as is a fashion, by *switches*, *rolls*, *mice*, and *chignons*, it is simply a garden spot for the development of diseased organisms. The *finger nails* should also be carefully cleansed.

All adventitious ornamentation should be eschewed, and the natural hair should be thoroughly washed, and, for perfect security, be bathed in a solution of salicilic acid, after an attendance upon any of the infectious fevers, before mingling with the outside world. Do these conditions seem unnecessarily onerous? You have but to bear in mind the possible results of their neglect. The possible transferrence of the *puerperal fever* poison to a healthy woman is nearly sure to result in death to that woman. The careless carrying of a scarlet fever disease germ may spread this terrible disease throughout a neighborhood. Never forget that your mission is to succor and save; that human life is entrusted to your

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care; nor fail to remember that your responsibilities are great, in proportion as the need of your best services is great; and moreover, that these responsibilities do not end with the care of your patient, but are often greatest in relation to the community in which you work and live. Nothing, then, which shall give promise of an added security against becoming the medium of transferring disease from those who have been in your care to others with whom you may come in contact will seem too troublesome or too onerous for you promptly, systematically, and cheerfully to adopt. So will your mission prove one of pure mercy, and your conscience be and remain void of offense towards God and towards man.

ART. VII.—*Lecture delivered in the Preliminary Course of* 1876 *at Starling Medical College, Columbus, Ohio.* By P. J. KLINE, M.D., of Portsmouth, Ohio.

GENTLEMEN: By request of the Faculty of your College I am delegated to the office of offering you a few lectures on "Physical Diagnosis." While our course must necessarily be short, and the lectures not by any means all that we would desire to present to you, either as to matter or manner, gathered as they have been amidst the cares of hurried and pressing professional duties, still, at the risk of being tiresome and leaving some important subjects unnoticed, we must here take time to bring before us some general considerations before entering into the details of so important a subject.

In this particular branch of your science you will find wide scope for the use of all your reasoning faculties and a well-disciplined mind, enlightened by sound and accurate pathological information, and guided by the unerring hand of anatomy and physiology.

The dissecting-room, the post-mortem examination, the laboratory, close observations of symptoms before death, and

careful inspection of signs after death must be your instructors. Without these aids *no one* can become a skillful diagnostician.

To us at the present day the path over which we must travel in search of knowledge from this branch of medical science is not necessarily a rough one, smoothed down as it has been by the many feet that have gone over it, enlightened as we are now both by the errors and discoveries of those who have gone before. The fathers in medicine were our pioneers, and we, their justly proud offspring, follow in the beaten track of progress and discovery that their tireless hands and indomitable wills have thrown up for us.

Still, gentlemen, I would not by any means wish to impress upon you that we have nothing to do but loiter in idleness and cull at our ease rare fruits by the way-side, or waste our time dreamily waiting in an atmosphere perfumed with grateful memories.

There remains much to do and that which is hard to accomplish. You have entered upon a profession that will *never* be completed; an art as varied as the human family is numerous, and as intricate as the human system is wonderful.

Do not be satisfied with what your lectures or your text-books may tell you. Read and think and examine for yourselves. While you are careful, do not be timid. The man who never made any mistakes never made any discoveries.

Carry the torch in your own hand and explore every dark and hidden recess in your profession. The knowledge which you thus acquire will make you skilled diognosticians, respected by your confreres, revered and honored by the suffering, and be the means of removing many apparently incurable maladies, and the power of prolonging human life. It will give you assurance in your calling, the confidence of your patients, and enable you to apply your therapeutics intelligently and boldly, and save you many weary hours of anxiety, simply because you know what is the matter, therefore what to do.

The discussions in consultation are not so often as to what should be done, but as to what is really the matter. The disease once made out, the line of treatment is generally very easily arrived at.

Physical Diagnosis is that branch of our profession which relates to the detection of anatomical changes caused by morbid process. These signs are ascertained by the sense of touch, sight, and hearing. The nature and extent of such changes can be recognized and appreciated by the deviations which they cause in the affected organs from the known physical condition of these organs when in health. The significance of physical signs in disease can be determined, not by theory, but only through clinical observation, confirmed by examinations after death. Therefore we conclude that "physical diagnosis" is partly a science and partly an art—a science because it comprehensively takes account of general facts, and an art because it demands a cognizance of the means and their application to arrive at the desired result.

Do not imagine that some become skillful in this branch by some intuitive knowledge of which they are the fortunate possessors. Men may arrive at different degrees of perfection in the art of diagnosis, possibly owing to some particular mental qualifications; but all who may reach a point of excellence do so by hard study, careful observation, and sound clinical instruction. For it is by the bed-side where diagnosis is best taught, assisted and enlightened by a thorough knowledge of anatomy, physiology, pathology, and chemistry.

Do not falter because it looks like a long and tedious route along which you must travel. "The longest journey is but a succession of steps, and the swiftest traveler can take but one step at a time."

The appliances and improvements in the methods of diagnosis have greatly lightened our burdens, and have made

many forms of disease in our practice as plain and easy of detection as they were formerly obscure and intricate.

Avenbrugen, about the middle of the last century, introduced the art of percussion, so ably presented by his learned and brilliant contemporary, Corvisart, and by Lanæ, whose name is immortalized by his introduction of auscultation and the stethoscope. These have enabled us to detect the condition and workings of organs hidden both from view and touch, and put it within the ability of the merest tyro to detect thoracic diseases that would have set at defiance the skill and accumulated knowledge of a Cullen or a Sydenham.

The microscope has done for us as much as the telescope has accomplished for the astronomer and his science. It has led us into many of the secrets of nature the unaided eye never would have been able to penetrate. It points out to us pathological changes wholly unappreciable to the ordinary sense of sight. Its penetrating eye searches out the hidden parts, tells us of molecular changes going on in organs entirely hidden from the sense of touch or sight. It is often the crucial test of pulmonary tuberculosis, and its unerring light has pierced the cloud of ignorance which for years over-hung the idea of spontaneous generation.

The thermometer comes in for its share of practical utility, in that it detects fluctuations in temperature wholly unappreciable to the ordinary sense of touch. Its sensitive column points out an internal inflammation, foretells an impending dissolution with wonderful certainty; it is the mile-board that marks the steady march of idiopathic fevers, and is often the means of setting at rest a diagnosis as to whether an elevation of temperature is dependent upon an organic change or a mere functional derangement.

The sphygmograph of Marvy also comes in for its share of work and aid in diagnosis. Chemistry, too, with its accurate tests, its re-agents, its wonderful revelations, robbed

of the superstition and mystery that enveloped it during mediæval alchemy, has become one of our most valuable, and, in urinary disorders, our best aid in diagnosis. But time forbids me speaking further of these outside helpers.

We must be well acquainted with the natural history of disease to be able and ready to draw a line of distinction between various morbid manifestations that affect one individual at the same time—know what diseases are peculiar to childhood and those which are rare in old age. We may not be able, at first examination, to detect whether a lesion is functional or organic. Had we more signs that were pathognomonic we might do so, but unfortunately they, like our curative drugs, are few and far between. Often the symptoms at the beginning of various maladies are so near alike that it is impossible to decide what we shall have to deal with. This more especially happens in fevers, with which medical has more to do than physical diagnosis, but a few days at most will clear up the trouble.

During the past winter, while the small-pox was among our citizens, it occurred to us frequently to be called upon to decide as to whether a patient was taken with variola or not. While it was epidemic among us, and we found individuals, unprotected by vaccination, suffering with severe pain in the lumbar region, occipital headache, vomiting, and with a fever that markedly exacerbated toward evening, we could say, in all probability that patient was seized with small-pox. But when the peculiar papular eruption made its appearance on the third, or, at furthest, the fourth day, accompanied with a marked abatement of all the violent symptoms, then we felt safe in saying we now knew, beyond a doubt, that we had to deal with a case of small-pox. We can not bring our science down to a mere mechanical management. Idiosyncrasies must be respected. We must be careful not to lose sight of our patient and his surroundings while we are aiming at the disease.

Were the manifestations of the same class of diseases just exactly alike in every individual, and the remedies for such diseases, under all circumstances, the same, then our art would be reduced to the working of a piece of machinery. Printed forms and rules could be given as inflexible as the laws of the Medes and Persians. Quacks and charlatans would become as skilled as our best educated physicians, and plodding mediocrity would outstrip genius and learning.

Frequently it is impossible to make an accurate diagnosis, owing to several morbid lesions obtaining in one patient at the same time. Disease is a very complex state, and when one portion of the economy gets out of order another is very apt to follow. In these cases the evidence from the sufferer must be very carefully taken, the lesion in the physical system closely and accurately scrutinized, then all this must be carefully weighed, no undue preponderance given to particular symptoms or signs, and an opinion given in accordance.

Sometimes the treatment becomes the touchstone to the diagnosis. Now, you will very naturally ask, Is it necessary that a case be properly diagnosed to the end that it be rightly treated? Not at all; it simply proves that we sometimes must aim at removing symptoms without understanding their source. How many of you can tell me in what manner or by what process does quinia interrupt the return of a chill? And yet we have seen it do so hundreds of times. There are facts in diagnosis as well as in therapeutics that we can not explain satisfactorily. All this does not prove that if we understood their source we would not be better able to remove symptoms. The practitioner that undertakes to remove simply symptoms of a disease without understanding the source, is like one groping in the dark—like the nervous soldier with his indiscriminate firing, as apt to wound friend as foe. His treatment is as undecided and vacillating as his ideas of the malady are obscure and uncertain. Drug re-

places drug, palliation takes the place of cure, and the experience obtained is entirely untrustworthy.

Now comes the proof of what I have already stated, that a correct and careful diagnosis, instead of being a mere waste of time, or simply a gratification of the curious, enables us to use our remedies knowingly and with decision, to appreciate what is being done, to abstain from such as must necessarily be injurious. There is less meddling and fretting, more calmness in the practitioner, and greater confidence on the part of the patient. The treatment rises above the consideration of the present moment, and takes into account what is for the patient's ultimate good.

Some will argue that great skill in diagnosis will beget a timid practitioner and weaken his confidence in medicine. Better would it be to say it shows how wide is the chasm between our knowledge of morbid conditions and their remedies. It only shows our art to diagnose far outruns our power to heal. And yet, gentlemen, this very knowledge will often prevent us from making rash promises when ignorance would prompt us to it, bringing naught but chagrin to ourselves and sorrow to the friends. It will often enable us to tell the course and probable issue of a malady, and so direct our course of treatment, if we are not able to cure, so that we may be at least the means of smoothing the pathway to the grave for the poor sufferer and prepare sorrowing friends for an event that must be inevitable.

You will now very likely ask what are the mental qualifications requisite to become proficient in diagnosis? Nothing more than that required in any other than medical investigations, viz., sound judgment, clearness of perception, accuracy of observation, a willingness to work, and good common sense. Now, in order to expedite this art of diagnosis, and to put our work into shape, so that it will be a benefit not only to ourselves but to others also, we must have certain plans by which we shall be guided in our investigations—

some definite method, and especially when we wish to keep a written record of our interesting cases.

To conduct a clinical inquiry with facility requires constant practice, and is rendered easier by following some well-digested plan. The advantages derived from adopting such a plan is easily seen by watching a beginner in his examination of a patient. His questions are scattering; no particular organ or symptom is fixed upon as a basis of investigation; he moves aimless from one part of the body to the other; does not weigh the testimony as it is elicited from each organ or symptom; and finally arrives at an erroneous conclusion, or gives up in despair.

In our examination of patients, our troubles are legion. In one we are obliged to draw out the information a good deal as a cork-screw extracts a refractory cork from the neck of a bottle. In another we are stunned and overwhelmed with their volubility; all the aches and ills possible to be borne by one poor human have taken up their abode with this individual. In another case we dare not ask a leading question, for their vivid imagination will locate a pain just where our question puts it, but of its existence they may have been in blissful ignorance up to the time of the examination. Then there are those who feign diseases for various purposes, but, not being good pathologists, they overdo the symptoms, and, according to logic, that which proves too much, proves nothing at all, so their attacks of epilepsy, paralysis, tuberculosis, aphonia, amaurosis, and insanity are not rare, but overdone.

Last, but not least in number and interest, are the children. Here, gentlemen, you will have an opportunity of exercising all the tact and ingenuity you can bring to bear upon these cases. The symptoms then must be the objective, and an intelligent, truthful nurse or mother will be to you a God-send. Your powers of observation will be taxed to the utmost, and you will often leave the bed-side of the little suf-

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ferer annoyed with the conflicting symptoms, and vexed at your inability to decide certainly what the trouble really is. But do not be discouraged at these things. Watch its mode of lying; its attitude when standing. Its cries will finally become an intelligent language to your educated ear; and when you have once overcome their fright and gained their confidence, they will be ranked among your treasures.

In all these cases you will arrive at the point of excellence by continued practice, and often you will be obliged to exercise the same tact and acumen to elicit facts that a lawyer is obliged to use to glean his evidence from a witness. One of the principal plans used to arrive at a diagnosis consists in first questioning a patient in regard to his history, his age, occupation; the diseases he has been subject to during childhood; habits of life; what affections, if any, are hereditary in his family. Then, after this, investigate his present condition, the origin, progress, and duration of his present malady; what remedies (if he has been under treatment) have been used. Interrogate each organ suspected or unsuspected. Now the investigation is complete, the diagnosis is settled upon, and the prognosis and treatment laid down.

This manner of examining is called the historical or synthetical method. There is another, in which the order is reversed, called the analytical method. In this the patient's present condition is first made out, and subsequently his history. Both of these plans have much in them to be recommended, and not a little that is objectionable. The former is more purely scientific, but it is too full of details, and requires too much time and labor for the hurry of ordinary professional life. It is better adapted for recording cases when we are in the pursuit of pathology, and decidedly the best when the symptoms are obscure, and the history of the case badly defined.

A very good and practical plan is to take a general history and survey of the most prominent symptoms of the patient;

and in this manner having obtained a clue to the part most likely to be affected, explore that with great care. It is also well to interrogate organs closely connected with this part, either organically or functionally. Say, for example, you are called to the bed-side. Inquire of the patient how long he has been sick; in what manner that sickness began; in what way he is chiefly troubled now; if suffering pain, and where; how long feeling ill before taking his bed; in short, what is it, according to his own sensations, that is giving him the greatest trouble. Meantime, we are watching his countenance, the position of his body, his movements, and manner of breathing; the hand is applied to the skin, and the pulse is felt. Partly from the examination, and partly from the history, some organ is fixed upon for examination. While this is going on, the mind intuitively sifts the evidence obtained; the history is reviewed; the balance between symptoms struck; the diagnosis cast, modified, or extended; and, finally, the treatment decided upon.

Now, gentlemen, you may say this all seems very plain and easy, and so it is when, all the symptoms are clearly marked, when we fully detect and understand their meaning, and when the case is a simple one. But we shall not be so fortunate as this all the time. Before we separate, we shall find it will not be our fortune to sail at all times on a smooth sea; troubles, mountain high, will break over us; but courage, determination, skill, and knowledge will bring us through at last, and land us in a quiet harbor.

ART. VIII. PLACENTA PRÆVIA.—*A paper read before the Montgomery County Medical Society.* By E. C. CRUM, M.D., of Dayton, Ohio.*

On the morning of June 7, 1872, I was called upon to attend Mrs. S., in confinement. Mrs. S. is a native of Germany, æt. 45, multipara, and had been in labor one hour pre-

* This article was received too late for insertion in its proper place.

vious to my arrival. Pains were regular, and each one was attended with a gush of blood. Upon making an examination per vaginam, I found the os uteri well dilated, felt the placenta implanted over the os, and on making firm pressure I could detect the vertex. I immediately made known the results of my examination to the family, and then proposed a consultation. Dr. Geiger was then called, and after making an examination, said that there was but one thing to do, and that was to deliver by bringing down the feet. The patient being placed in position, I now proceeded to accomplish version. On the introduction of the hand the uterus contracted, expelling the placenta, and all hæmorrhage ceased. We then waited some two hours, after which the delivery was accomplished with the forceps. Mrs. S. made as speedy a recovery as if it had been one of natural labor. A little more than three years after, I was again consulted at my office by Mrs. S. in regard to a discharge of blood from the vagina. She stated that she was about three months pregnant, and that she was in great fear, believing that she would have the same trouble as before. After trying to quiet her fears in regard to her case, I advised her to return home, keep as quiet as possible, and if any thing should occur to let me know. I did not hear from her for some time, when, on March 13, 1876, I was called to see her about 8 o'clock A.M. I learned from her that she had been losing small quantities of blood since the third month of her pregnancy. This morning she experienced pain, accompanied with hæmorrhage. Upon making an examination per vaginam, I found the os slightly dilated, but only sufficient to admit the tip of the finger, and could feel the placenta resting partially over the os, and on making firm pressure I could detect the vertex. I then called Dr. T. D. Davis, who, after making an examination, said that he did not think she was more than six months pregnant, and as delivery could not be accomplished, suggested the internal use of fl. ext. of ergot and

the application of the tampon. He did not believe it was necessary for him to remain with me, believing that nature would terminate the case favorably. I remained with her nearly all day, and gave her the ergot and applied and re-applied the tampon. The os continued to dilate slowly, and the pains continued weak, without assuming any expulsive character. About 3 o'clock P.M. she began to show signs of exhaustion, syncope supervened, and the strength of my patient seemed to be rapidly fading away. I then called for Dr. Davis a second time, after which it was decided upon to call Dr. J. C. Reeve, who, after examining the case, said that he would proceed to deliver by bringing down the feet. This he speedily accomplished, Mrs. S. being delivered of a six-months fœtus. The hand was re-introduced, and the placenta extracted without any hæmorrhage following. Mrs S., though much exhausted from the loss of blood, improved rapidly under the use of tonics and stimulants, without the appearance of any unfavorable symptoms. One important circumstance to which I wish to draw your attention is the occurrence of this abnormal implantation of the placenta twice in succession in the same patient. After examining the various records and searching the various obstetric works, I must say that I am unable to find any report of cases in which this malposition occurs twice in succession in the same patient. The cause of this occurrence of placenta prævia I believe to be due to a debilitating influence of predisposition. If we examine the reports of various cases, we find that it occurs largely in women who have previously borne large families who breathe an impure air and are imperfectly nourished. Dr. Robert Grieve (Glasgow Med. Journal, April, 1876,) states that of all the cases which came under his observation, not one was a primipara, that the fifth labor was the lowest and the eighth the highest, all were between thirty and forty years, and that all were poor and physically weak. The mode in which the debilitating influence of predisposition

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causes placenta prævia is by overcoming the tone and elasticity of the organ, thus allowing the ovum, as it emerges from the orifice of the Fallopian tube, to gravitate to the most dependent portion of the uterus, where the placenta becomes developed in consequence of some disease of the chorion, rendering it unfit for placentary development, or some disease of the fœtus. Fortunately placenta prævia is not of frequent occurrence. Dr. Schwarz having examined the official returns made by the Hesse-Cassel pracitioners, states that during a period of twenty years five hundred and nineteen thousand three hundred and twenty-eight births were reported by one hundred and fifty accoucheurs, and among them three hundred and thirty-two cases of placenta prævia, or one in fifteen hundred and sixty-four labors, the numbers varying from eight to twenty-eight per annum. Dr. Thomas (New York Med. Journal, Feb. 1870) states that it occurs once in five hundred cases, but according to the more recent and larger statistics of Depaul, only once in about twelve hundred cases. We usually find the symptoms of placenta prævia described as occurring at two different periods. First, those which occur previous to labor; and secondly, those which occur at the time of labor. When they occur previous to labor the pregnant female will be taken with a sudden flow of blood, gushing out with more or less violence for a moment, and then ceasing for a time, and then returning again, with similar intervals of quietude, exciting in the patient little, if any, apprehension of danger. Second, at the time of labor the flow of blood is attended with pain indicating the commencement of labor. Of this, however, we can only be certain by an examination per vaginam. Should the discharge of blood increase as the pains of labor advance, and there be no reason for a suspicion of accidental bleeding, we have a good degree of evidence that the case is one of placenta prævia.

Now we see that placenta prævia may exist without any

suspicious symptoms, for in the first case of Mrs. S. she, during the entire period of her gestation, had no periodical hæmorrhage, or any other symptoms which would have led one to suspect its existence. During her second pregnancy this symptom (hæmorrhage) appeared as early as the second month, and continued, with more or less violence, until the sixth month, when she aborted. We shall know the placenta by the fleshy fibrous and lobular sensation which it communicates to the finger, and by its being attached to the inner surface of the cervix. There is a probability of our mistaking a coagulum blocking up the os uteri for the placental mass; but the placenta can not easily be perforated or broken down, the tenacity of a coagulum may, without difficulty, be destroyed; the placenta is attached within, a coagulum lies loose; the placenta can not be removed by the finger, but we can bring away a coagulum.

The most important and interesting circumstance connected with placenta prævia is, unquestionably, its management; for, although the fatality of these cases is comparatively great, both to the mother and child, yet, through prompt and judicious management, it may be much diminished. As the hæmorrhage is the peril, it is that to which our attention should be directed. Different treatment has been advocated by different authors. The earlier writers practiced immediate delivery. Smellie, in 1752, dilated the os with the fingers, ruptured the membranes, and also resorted to the forceps, the crotchet, or podalic version if the hæmorrhage persisted or the labor delayed. The tampon was an important advance made in 1776 by Lereax. Ergot has its advocates, and has frequently been used to supplement some of the other modes of treatment. Thirty years ago the name of Sir James Simpson was so identified with its treatment that his method was urged with all the earnestness and ability of its distinguished advocate. Observing that some cases did well where the placenta had become completely detached,

and was delivered before the birth of the child, he asserted this rule of practice. In his table of one hundred and forty-one cases, he shows that one child out of every three survived, or thirty-one per cent. of the children were saved, while sixty-nine per cent. of them died—the mortality being one in fourteen. Dr. Barnes advocates partial detachment of the placenta. Premature labor was practiced as late as 1862 by Dr. Greenhalgh. He advances the argument that in any case of hæmorrhage due to placenta prævia, occurring after the seventh and a half month of utero gestation, when the child is viable, it is expedient both for the mother and child to expedite labor, unless the condition of the patient from exhaustion prevents it. Dr. Thomas believes that it should be the recognized practice to resort to premature delivery as a prophylactic measure in cases of placenta prævia. Some of the best obstetricians believe at the present time that it is best to arrest the hæmorrhage, and wait until the completion of the term of gestation; while just as eminent obstetricians are adopting, as affording the best result, premature delivery, for it is generally conceded that by this mode of delivery more mothers and children are saved than by any other. However, time can only draw a conclusion between these modes of delivery. As for myself, I am at present unable to state from which of these modes the best results can be obtained, but I am inclined to favor premature delivery.

Now, as for the best means of accomplishing delivery, there is a great discrepancy, but all are agreed that the imminent danger is from hæmorrhage, and almost all will say that asphyxia is the danger threatening the infant. The various modes for the treatment are ergot, puncturing the membranes, the tampon, podalic version, complete detachment of the placenta, and its partial detachment as urged by Dr. Barnes.

Ergot, the first on the list, has its warm advocates, who claim for it wonderful power in arresting the hæmorrhage.

Admitting all this, we must not lose sight of the infant. Asphyxia is its danger. Ergot produces contraction of the uterus, and lessens the surface for the purification of the blood, and also hinders the influx of maternal blood to the uterus. The conditions in which ergot is admissible for the safety of the child are, when the os is dilated or dilatable, and the labor can be speedily terminated.

Puncturing the membranes is recommended, and has been especially applied to cases in which the presentation of the placenta is only partial, and where, consequently, a portion of the membranes was in reach, and to cases in which the hæmorrhage was only slight in its degree and effects. But this mode of practice is equally objectionable with ergot, so far as the mother and child are concerned, for it may convert an open into a concealed hæmorrhage.

Podalic version is also considered by many both dangerous to the mother and child. However, this is insisted upon by the more recent authorities as *the* treatment in placenta prævia.

The complete detachment of the placenta, as urged by Sir James Simpson, has not received general indorsement. This distinguished author gives a tabular statement of the favorable results of this mode of practice, and from these results argues its propriety. One principal reason for the non-indorsement of this mode of practice is, that it has not been as successful as other modes of treatment.

The partial detachment, as urged by Dr. Barnes, has been shown to rest upon an erroneous theory; hence this mode of practice has not been indorsed.

The tampon is objected to by some, according to the material from which it is made, and admired by others. The principal objection to it is, that it converts an open into a concealed hæmorrhage.

The form recommended by the largest number of the profession is the hydrostatic dilators, which not only act as a

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dilator, but also as a tampon. By these dilators hæmorrhage can certainly be prevented, and delivery affected within a few hours.

Having considered the treatment of others, a few suggestions of my own may not be amiss. When we are summoned to a case of placenta prævia, our conduct should depend upon the period of pregnancy, upon the state of the os uteri, and upon the amount of hæmorrhage. If upon our arrival we find that she has arrived at her full term, that the os is soft and dilatable, or dilated sufficiently to admit the tips of three fingers, it will be our duty to deliver at once, according to the requirements of each individual case. We may sometimes find the condition of the patient not quite so favorable for delivery; for instance, we may find her faint and gasping and cold; the uterus quite inactive, with its mouth wide open, and possessing a degree of flabbiness which is indicative of the most imminent danger. Under this condition delivery would be easy, but it would be followed by almost certain death; for if we empty the uterus under syncope, it will not take upon itself the active contraction necessary to close its vessels and insure perfect safety. Here we must rouse the patient from this torpid state in which she is lying, and bring the system up to a certain point before we attempt to deliver. Stimulants here are called for. Brandy, ether, and ammonia may be administered until the restoration necessary is procured, and then delivery attempted.

Again, we may learn that, previous to our arrival, there has been considerable hæmorrhage, and upon making an examination per vaginam, we find that the os uteri is not dilated larger than a sixpence, but is soft and distensible. Here we may do one of two things: either use the hydrostatic dilator, or give ergot and apply the tampon. Of the two, I believe the hydrostatic dilator will be attended with the most favorable results; for, as a principle, recourse to delivery had better be had an hour too soon than an hour too late.

TRANSLATIONS.

ART. IX.—*On the Epithelial Changes produced by Sarcomatous Growths.* By Dr. RUDOLPH TAUSZKY, of New York. Translated from the Transactions of the Royal Academy of Science of Vienna, Vol. LXXIII., January, 1876, by OTTO FRANKENBERG, M.D., Prof. of Pathology in Starling Medical College, Columbus, Ohio.

It is a well known fact that sarcoma growths, which have originated either in the cutaneous or subcutaneous tissue, also those which appear in more deeply situated tissues in their progress towards the surface, sometimes bring about ulcerative processes of the integument.

The integument covering the tumor is always attenuated, before the ulcerative process begins, often accompanied with inflammatory symptoms. After a certain time a visible loss of substance is observed at the most prominent point of the tumor, which gradually enlarges, and at the bottom the tumor is seen as a reddish, slightly nodular, or even smooth mass of connective tissue. The ulcerative surface produces, as a rule, a relatively small quantity of pus. Clinically this is a valuable symptom, as diagnostic of a sarcoma tumor. Carcinoma invariably gives rise to ulcerative processes on the skin, and the ulcers thus produced present uneven, nodular, and irregularly granulating surfaces, which produce pus or ichor.

The question now comes up, What histological changes take place during the disappearance of the epidermis? Of course, with the customary expression of "shrinking or dying" of the epithelium a clinical view is only given, the cause must be sought in anatomical changes. At the same time the question may be answered, What changes does the epithelium of glandular organs undergo when sarcoma growths appear in these?

The literature of the growths under consideration has not

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given me a satisfactory explanation of the question. I therefore examined a number of sarcoma growths of the skin and glandular organs, with special reference to the behavior of the epithelium. My specimens were:

1. A sarcoma growth about the size of a child's fist, which was extirpated from the abdominal wall of a man fifty-five years of age, by Prof. J. H. Pooley, of Starling Medical College, Columbus, Ohio.

2. Sarcoma growths of walnut size, which appeared in the right groin of a man sixty-nine years of age. After repeated extirpations they were followed by numerous secondary sarcoma nodules in the lungs. The post-mortem examination was made by the attending physician, Dr. L. Schöney, of New York.

3. A sarcoma growth of the testicle, very near the size of a child's head.

4. A sarcoma growth of the submaxillary gland as large as a chicken's egg. Both extirpated by Prof. Henry B. Sands, of New York. The sarcoma of the testicle was removed from a man forty-eight years of age, and the submaxillary tumor from a man aged seventy-two years.

5. Sarcoma nodules from the liver of a man aged fifty-nine, which appeared secondarily after a primary extirpation of a tumor of the eye-ball, at the same time nodules made their appearance in the omentum, mesentary, and walls of the small intestines. The post-mortem examination in this case was made by Dr. Rödiger, of New York.

I will say in advance that in these sarcoma growths were represented the so-called round cells (cases 3 and 4), spindle cells combined with round cells (case 3), and alveolar cells (cases 2 and 5).

In case 1 the tumor was composed of an uninterrupted mass of protoplasma, in which appear, at almost regular intervals, oblong, spindle-shaped, or regular, almost homogeneous nuclei. Only in the periphery of the tumor did I

find protoplasma corpuscles in cutaneous and subcutaneous connective tissue, such as we also observe in inflammatory processes of the above-named tissues.

I pass by the more detailed description of the tumors, as not belonging to my subject.

I believe that, in order to understand the changes of the epithelium, we must accept Dr. C. Heitzman's theory of the origin of epithelium as correct, which was presented to the Royal Academy of Vienna in 1873, entitled "Researches on Protoplasma."

According to this view the epithelium is built up from elements (cells) which are separated one from the other by a thin layer of basis or cement substance, but are connected among themselves by means of simple spiculæ (Stacheln Max Schultze).

The epithelium is accordingly a continuous layer of protoplasma which is not supplied with blood-vessels. In each individual element the living matter produces the nucleus, the shell of the nucleus, and the nucleolus, and all these formations are in continuous connection among themselves by means of fine threads. The living matter also forms the marginal layer of each epithelial element, and by means of the spiculæ that are visible in the cement substance the connection between the living matter is established. The cement substance which surrounds each element like a cloak is without life, and must be looked upon as being derived from the fluid of the protoplasma. I particularly wish to emphasize that, according to this view, the spiculæ (Stacheln von Max Schultze) which traverse the cement substance are said to have their origin in the living matter, for only in accordance with this supposition are the pathological processes which we so often meet with in the vicinity of the cement substance easily and satisfactorily explained. The lifeless portion, that is, the cement substance itself, is, according to this view, analagous in chemical behavior to

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the basis substance of the connective tissue. Just as in the earlier stages of an inflammation, a dissolution (melting) of the basis substance takes place which sets free the living matter that had been imbeded in it, and causes the reappearance of protoplasma, we also observe in the epithelium, during the earlier stages of interrupted nutrition, a dissolution of the cement substance, which causes a complete or partial coalescence of several neighboring epithelial elements. First of all protoplasma corpuscles are formed which contain several nuclei, and in these appears new cement substance from which formations may originate that are morphologically different from epithelium.

The newly formed elements have often lost the character peculiar to epithelium; the elements formed are smaller, but may closely resemble those that originate in connective tissue. I must emphasize the fact that the transformation of epithelium into formations of different shapes and sizes is possible only after the cement substance has been melted (eingeschmolzen) and again newly formed later on. It is very improbable that while the cement substance remains intact, a physiological or pathological enlargement of the epithelium can take place, because the cement substance is a pretty strong shell, which surrounds the protoplasma of the epithelium, and, as is well known, makes the locomotion of a free epithelial scale impossible even upon a heated slide. We can not conceive how it would be possible that a perceptible growth of the living matter within the protoplasma could take place unless a previous softening had gone before.

Every particle of living matter is endowed with productive powers, that is, is capable of growth and of reproducing its like. Not only the nucleus, but every granule within the protoplasma possesses the power of growth, of dividing itself and forming new elements.

This fact holds good alike for the living connective tissue as well as for the epithelium that is still living. The super-

ficial layers of the epidermis are to be considered as epithelial formations which have become dry, are devoid of life, have lost the productive power, and are simply cast off. The line which divides the living from the dead epithelium is often a sharply defined one.

If we see, therefore, a number of coarse, glistening, yellowish granules in the epithelium, the explanation is found in the fact that the living matter contained in the protoplasm of the epithelium has increased by growth. The peculiar lustre of these granules (Klümpchen), the power of carmine to color them red, the chloride of silver to color them violet, differentiates them sufficiently from fat. Such homogeneous globules sometimes appear in limited numbers only in the protoplasma; at other times, however, they are so numerous as to make it impossible to see the nucleoli at all. These granules remain connected with one another, at first by means of fine threads, and form the basis for the so-called endogenous, new formation of elements which we often meet with in inflammatory processes of the epithelium.

But the living matter in the spiculæ (Stacheln) is also capable of growth if supplied with a sufficient amount of nutritive material. The thread is changed into a molecule, then into a granule, and when a number of these elements unite may give origin to red or spindle-shaped elements, which still remain connected with neighboring bodies by means of fine threads. And here, also, is another source from which a new formation of elements takes place. The union of the new elements with neighboring bodies permits of precluding the idea of an immigration, at least in many places, as it was supposed by A. Biesiadecki.

I now turn to the description of those changes of the epithelium that are conditioned by the growth of sarcomatous tumors.

These changes may be divided into two groups. The first group embraces the purely inflammatory processes; the

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second group, on the contrary, touches upon changes that lead to the production of sarcoma elements out of epithelium. No distinct division can be drawn between these two groups, because the changes observed in inflammation are like those that accompany the growth of tumors, inasmuch as the question in both cases is with regard to the new formation of living matter and formation of new elements.

Inflammatory Changes.— Preparations of the tumor, mentioned in section 1, taken from the integument near the ulceration, show with low power that the layer of epidermis was thinned in several places. We see that at first the pigmented layer which constitutes the immediate border next the connective tissues is in a condition of moderate "*cell infiltration*," that is, inflammation. The pigmented epithelium lying next to the connective tissue, in the majority of instances is arranged irregularly, and is deficient in many places. A higher amplification shows that the epithelium along the confines is broken up into elements which are not morphologically distinct from those that originate in connective tissue. Only the pigment in the nuclei is a reminder of the origin of these elements, but the pigment here also grows gradually less, as the inflammatory changes make their way toward the epithelium. We next meet with groups, or dispersed pigment granules, lying in the region where the changes take place, apparently remains of the former epithelium, but the larger mass of pigment disappears, probably by interference with the nutrition of the pigment granules themselves, that have not yet been entirely deprived of viability. In this case, with moderate inflammatory appearances, the epithelium containing pigment is changed directly into indifferent protoplasma corpuscles, which serve as a basis for the formation of new elements. A really new formation has as yet not taken place, but out of specific elements indifferent elements have been produced by the formation of new border lines. (Kittsubstanz.)

Of particular interest is the behavior of the hair-follicles and sweat-glands which are imbeded in the tumor. Many hair-follicles that still contained hair presented no essential change in the substance of the hair-follicle or in the root-sheath.

On the contrary, I have met with hair-follicles in which the hair was missing. Here the connective tissue of the hair-follicle was transformed, in patches at least, almost completely into tumor tissue. The elements of the outer root-sheath had divided into numerous glistening, brownish-yellow bodies, so that the original form of the epithelium could only be recognized by the grouping of these bodies. (Klümpchen.) These bodies were all connected one with the other by fine threads.

The ducts of the sweat-glands remained unaffected in most instances, but, on the other hand, the glands presented a conglomeration of glistening, yellowish bodies, which by their grouping indicated that their origin was from the gland epithelium. The central lumen was absent in many transverse sections of the ducts. The connective tissue bordering on the epithelium was absent in patches, in such a manner, moreover, that the tumor tissue came in direct contact with the changed epithelium. As to the further changes of the gland epithelium I can say nothing.

The skin which covered the tumors, mentioned in division 2, was not ulcerated in any place, but was only stretched and redened. Perpendicular sections through the outermost portions of the tumor instructed me as to the singular changes in the epidermis. It was reduced to but a few layers of epithelium, the mucous strata being thinly covered. Near the surface several epithelial scales had coalesced, which was made apparent by the fact that the bands of cement substance had disappeared (in the optical diameter). The spiculæ (Stacheln) which traversed the bands of cement substance were well marked in all instances, even swollen to

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square or somewhat round granules. At many points the granules were not visible at all, and their place had been taken by peculiar, glistening bodies, spindle or oblong in shape, which correspond exactly with the "*migration cell*" described by Biesiadecki. By careful observation, however, one soon becomes satisfied that they were connected with the neighboring elements by fine threads. Particularly numerous were these formations along the border that separated the epithelium from the sarcoma tissue, where, indeed, the spindles themselves underwent the transition directly into those bands which separated the several sarcomatous elements one from another. Here, then, we have to do with a new formation, principally derived from the spiculæ, whereas it is not possible to demonstrate the transformation of epithelium into sarcomatous elements. The perceptible thinning of the *rete mucosum* can probably only be explained by those changes.

Transformation of Epithelium into Sarcomatous Elements.—The tumor of the scrotum mentioned in division 3, offered splendid opportunities for the study of changes in the epithelium of the scrotum caused by sarcoma growth. Even with low powers, the conviction was soon gained that the sarcomatous tissue had in several places separated the walls of the seminal ducts considerably, and in many situations the gland tissue could not be discovered. Several transverse sections of the canals showed that not only was the line of demarcation between the sarcoma and epithelium absent, but that the epithelium represented, in part at least, the same tissue as did the tumor. Higher amplification satisfactorily explained this peculiar condition.

The epithelium in a transverse section of a gland duct appeared to be well preserved in one place. Near by, several epithelial scales showed a number of coarse nuclei and granules that represented nuclear-like formations.

It was surprising that only in patches the above-described

changes of the epithelial scales had taken place; whereas in other parts no considerable changes were present except that the nuclei appeared larger.

Lastly, there were places in which it seemed that the epithelium had been replaced by sarcoma tissue. Here all the transformations of the normal epithelium, which was converted into sarcoma tissue, could be followed step by step. The growth of living matter had given rise to the formation of new granules and nuclei. New cement substance conditioned a division into elements, which possess no further similarity to epithelium. Finally, a partial transformation of the protoplasma, in the newly-formed elements, into the basis substance in its perinuclear form resulted, which is characteristic of fœtal marrow as well as of many sarcoma tumors.

The result of these changes was the immediate and complete transformation of epithelium into sarcomatous tissue. In the last case isolated groups of epithelial scales, from six to twelve in number, were observed; but these were, in my opinion, remains of the gland epithelium, and not new formations of the gland.

I will only remak that in these, also, a direct connection was observed to exist between the glistening, spindle-shaped bodies that had formed in the cement substance and the coarse mesh-work of the sarcoma tissue. Further, that here, also, all the new formations of living matter (nucleoli, nuclei, granules, spindle cells, bands) were connected among themselves by means of fine threads. Even in the perinuclear, apparently, hyaline basis-substance, the presence of living matter could be demonstrated in spots, even without the aid of chloride of gold-staining.

Explanation of the changes produced in the epithelium of the liver by sarcoma formation I obtained from the case mentioned in division five. Low amplification shows that the newly-formed sarcoma nodules were separated by a tolerably

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thick capsule of connective tissue from the surrounding tissue of the liver. That which was within the capsule was alveolar sarcoma tissue; outside the capsule the epithelium bands of the liver were compressed into narrow spindles, which ran along the surface in a parallel direction. But in places the division line between sarcoma and the tissue of the liver was not sharply defined, indicated only by remaining bands of connective tissue. Probably these spots corresponded with the sarcomatous nodules of later and latest date. It is apparent that, partly at least, the liver epithelium bands have been well preserved, whilst in other parts the epithelium has undergone a disintegration and breaking up into round or irregular-formed bodies, which could only have originated from the living matter in the epithelium. These bodies present all the changes of their transformation into sarcoma elements, as they appear in groups, as they approach the sarcoma nodules, which, by virtue of their shape, must be pronounced sarcomatous alveolar formation, separated one from the other by sparse bands of connective tissue.

Here, also, by the endogenous process of formation of living matter out of the liver epithelium has led to the formation of sarcoma tissue. The brownish color of the liver epithelium gradually fades away until it attains the grayish yellow of the sarcoma nodules. In like manner the gradual transformation is indicated by the degree of carmine-staining, which was absent in well-preserved liver epithelium, but, on the contrary, became more distinct as the newly-formed tissue became removed from the normal type of epithelial growth.

I can add that the sarcomatous growth in the submaxillary gland, mentioned in case four, presented in places analagous appearances. Here, again, the transformation of the epithelium of the salivary gland acini could be followed step by step.

My examinations gave in short the following result: The

sarcoma growth, progressing toward the epidermis, necessitates a change in the living portion of the epithelium similar to that which we have observed in the superficial inflammatory processes of the skin. The cement substance becomes loosened; multinuclear protoplasma, originating in these new division lines, are marked out, which leads to the formation of indifferent elements analogous to those of connective tissue; or, by the new formation of living matter within the epithelium, as well as in the cement substance, situated between these in the last case, new elements are formed from the living matter contained in the spiculæ. A similar new formation takes place in the outer layer of epithelium of the root-sheath of the hair-follicles and of the sweat-glands. The thinning of the epidermis is probably conditioned by the transformation of the epithelium of the mucous layer into sarcoma tissue.

Sarcoma, which appears in glandular organs (testicles, liver, salivary gland), leads to the new formation of living matter within the protoplasma of the epithelial scales, and to the formation of new division lines and new sarcoma elements. The living matter of the epithelium is directly converted into sarcoma formations, in consequence of which follows a partial or complete destruction of the epithelium.

APPENDIX.

As it may add to the interest of Dr. Tauszky's paper, and will not occupy much space, I will give the clinical history of the first case to which he alludes.

Mr. R., German, aged fifty-five years, consulted me in November, 1874, on account of two growths or tumors situated upon his abdomen. There were two tumors, one about the size of a hen's egg, the other somewhat smaller, close together, but separate, and making up a mass about the size of a child's fist, situated about the middle of the right lateral half of the abdominal surface, a little below the umbilicus.

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They projected in an obtusely conical form from the surface, were covered by a very thin but apparently unbroken integument, which was immovably attached to them, but they had no deep attachment, and seemed to have a perfectly flat base, appearing like growths developed entirely in the skin itself.

They had grown so slowly and gave him so slight an amount of inconvenience that he could not tell exactly when they made their appearance.

They gave him no pain except when pressed upon, and as they thus interfered with his occupation, that of a bootmaker, he desired their removal.

They were removed by cutting out an ellipse of integument in which they were included, and were found not to extend deeper than the skin, to have a flat base, and on section presented the naked-eye appearance of firm sarcomatous growths.

The wound healed favorably, and up to this time there has been no return of the disease.

The tumors were sent to Dr. C. Heitzman, of New York, for microscopic examination, from whom I received the following report:

"The two tumors, located close to each other in the wall of the abdomen, presented to me by Dr. Pooley, consist principally of minutely granulated protoplasma, with numerous round and oblong yellowish and shining elements. The latter stand in size and structure in the same relation to the protoplasma as nuclei to cells. The oblong elements are arranged in many places of the mass in bundles.

"The smallest elements (0.012 m. m. in size) are compact, without visible structure; the larger ones show some vacuoles, and the largest (0.06 m. m. in size) are densely granulated. The tumors contain a few large capillary blood-vessels, with large endothelial elements. In the center of the tumors there is no connective tissue to be found. One of the tumors is denuded of the covering skin, and lies bare, showing a

smooth surface." [This fact escaped the superficial examination of the tumors made before they were sent to Dr. Heitzman.—J. H. P.] "Those parts of the skin adjacent to the normal skin are very much thinned. Sections in the neighborhood of the borders of the skin prove that the skin is infiltrated with the small elements above mentioned, extending nearly to the section made by the surgeon; in some regions the elastic fibres only are preserved.

"It is easy to observe the appearance of the protoplasma in place of the connective tissue of the skin, then the new formation of compact layers, in certain centers representing the elements of the tumor. The epithelial corpuscles of the rete malpighii are not changed, but without distinct boundaries toward the tissue of the corium, those of the sweat-glands are transformed into shining particles, the epithelium of the ducts of the same being normal. The sebaceous glands in the surrounding skin are moderately enlarged.

"The investigation shows that the tumors are developed in the subcutaneous tissue, and concerning their structure are to be ranked in the class of tumors called round-celled and spindle-celled sarcoma.

"These tumors are known to return easily after extirpation, and in the same locality, being of a malignant character."

As already noted, there has as yet been no return in this case.

J. H. POOLEY.

DIED, at his home in Portsmouth, Ohio, October 15, 1876, of paralysis of the heart, Dr. A. B. Jones, æt. 47 years, 5 months, and 15 days.

Dr. Jones was well known to the profession of the State, having once been President of the State Medical Society, and possessing many of those qualities, both personal and professional, that made him a man of mark among his brethren.

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CORRESPONDENCE.

LETTER FROM NEW YORK.

162 W. Thirty-Fourth St., New York, Nov. 20, 1876.

Dear Doctor: As you well know, it is not many years since physicians as well as students of medicine who desired to familiarize themselves with the science of dermatology had to rely principally on English, French, and German text-books, and had to cross the Atlantic ocean if they desired to acquire a thorough knowledge of the diseases affecting the human skin, and the best methods of treatment applied for their cure. Thanks to American energy, enterprise, perseverance, honest labor, quick perception and appreciation of the works of other nationalities abroad, we do not remain behind in the race for steady progress in any branch of the healing art, and this I wish to record without attempt at self-laudation, that we already have to-day in this country a great number of able, conscientious, and zealous workers in the scientific field herein referred to. We now have not only an American periodical exclusively devoted to dermatology, ably edited by Dr. Lucius Duncan Bulkley, but we have also an American text-book on the diseases of the skin, whose author, Dr. Henry G. Piffard, of this city, deserves the credit of having written, as far as I am aware, the first book ever published in this country on dermatology. I am glad to be able to add my testimony to those of many others, here and abroad, to the effect that the author has most creditably acquitted himself of his difficult task. I can not omit mentioning another beautiful work which emanated from American brains and hands, and this is Dr. Duhring's Atlas of Skin Diseases, recently published in Philadelphia. Among American authors on dermatology might also be mentioned the name of Dr. Bronson, one of the translators of Ziemssen's Encyclopædia of Medicine; furthermore, Dr. W. R. Taylor, of this city, who has enriched the literature of syphilis by his widely recognized researches and observations regarding that formidable affection in children, especially in reference to the osseous tissues. Dr. White, of Boston, who has published two thousand cases of eruptive diseases, may be ranked among one of the best informed dermatologists in this country. Hebra, of Vienna, whose methods of treatment I have

published in English in the Cincinnati Clinic, would have to subscribe to every word Dr. White says, as correct, regarding diagnosis, prognosis, and treatment of his cases. Dr. Chs. Heitzmann, although not an American by birth, but proud to be one by adoption, already enjoys the reputation, earned by many years of steady and zealous work, of being an excellent diagnostician in affections of the skin.

But what I desire briefly to bring to the notice of your readers are the titles of the papers which were presented in the section on Dermatology and Syphilography, at the International Medical Congress, held in Philadelphia in September last, in accordance with the promise I made in my letter of the last number of your esteemed journal.

The title of the first paper presented was "Variations in type and prevalence of diseases of the skin in different countries of equal civilization." Reporter, Jas. C. White, M.D., Professor of Dermatology in Harvard University.

Second. "Are eczema and psoriasis local diseases, or are they manifestations of constitutional disorders?" Reporter, Lucius Duncan Bulkley, M.D., New York.

Third. "The virus of venereal sores: its unity or duality." Reporter, Freeman J. Bumstead, M.D., late Professor of Venereal Diseases at College of Physicians and Surgeons, New York.

Fourth. "The virus of venereal sores: its unity or duality." By Chas. R. Drysdale, M.D., Senior Physician to the Metropolitan Free Hospital, London.

Fifth. "A new method of treating seborrhœa." By Chs. Heitzmann, M.D., New York.

Sixth. "The treatment of syphilis with special reference to the constitutional remedies appropriate to its various stages, the duration of their use, and the question of their continuous or intermittent employment." Reporter, E. L. Keyes, M.D., Adjunct Professor of Surgery, and Professor of Dermatology in Bellevue Hospital Medical College, New York.

Seventh. "The treatment of syphilis, with special reference to the constitutional remedies appropriate to its various stages." By Chas. R. Drysdale, M.D., Senior Physician to the Metropolitan Free Hospital, London, England.

All these papers, with the remarks elicited during their discussion, will appear in extenso in the transactions of the International Congress. All those interested in dermatology and syphilography will find in them the views held by the most prominent men in the profession, both here and abroad, regarding the status of the momentous questions that were presented and discussed. Even a brief epitome of the most important points

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brought out would at this time require more space than you could assign to it, and it is therefore omitted for the present; the more so, since, in conclusion, I desire to communicate to your readers, as I have done in former numbers, some notes on the papers which were read before our medical societies in this city since the publication of my last letter. Before the New York Journal Association (formerly called New York Journal and Library Association, but since the library has been sold it is known as the Journal Association), October 6, 1876, Dr. P. B. Porter read a paper entitled "A Comparison of the Various Methods of Treatment in Pertusis." The Doctor claimed to have drawn the attention of the profession in a publication on the treatment of whooping-cough by hydrate of chloral, in 1872 and 1873, which he was convinced by careful clinical observation was the best remedy to be used for the cure of that distressing affection. Each attack was greatly modified by the administration of chloral, and in from five to six weeks the patients under his care fully recovered. That, however, chloral was not the remedy *sine qua non*, the Doctor proved by his statement that lately he experimented with quinine and the fluid extract of castanea vesca. To which of these remedies preference should be given, he was not prepared to say. Some cases do well if chloral is administered; others are benefited by the use of quinine; still others by the inhalation of sulphuric ether, bringing the patient entirely under under its influence. Of all the methods employed, quinine and chloral, one or both, seemed to him the most useful remedies employed in whooping-cough.

Dr. E. Frankel spoke on "Pulmonary Affections," October 13, before the same Association, principally of the disease known by the name of typhoid pneumonia, or bilious pneumonia, to which lately the name "primary asthenic pneumonia" was given. He described the symptoms of this disease, and the *post-mortem* appearances, the latter of which were, imperfect infiltration, with inflammatory products of portions of the lung involved; purulent infiltration was almost constantly found; gangrene of the lung occurred more frequently in this than in any other variety of inflammation of the lungs; spleen enlarged. In his opinion, the disease depended upon a specific poison.

The operation of thoracentesis in cases of pleuritic effusion was not so harmless an operation as it was formerly believed to be, and the Doctor thought the operation should be abandoned. On the other hand, in cases of purulent effusion into the pleura, free incisions through the chest walls and occasional washing out of the cavity was reported to be excellent practice. One case of primary cancer of the lungs was related, but could not be diagnosed during life. The communicability of phthisis from hus-

band to wife, and vice versa, had been frequently observed by authors, which might take place through the seminal fluid and the fœtus, if communicated by the husband. Finally, the compressed air treatment of lung affections was alluded to. It is the experience of those using it that it is highly beneficial and should be more generally used than is the case now. October 20th, "Cerebral Exhaustion, with Special Reference to its Galvano-Balneological Treatment," was the title of a paper read before the Journal Association by Dr. Geo. M. Schweig (proprietor of a Galvano-Balneological Institute in this city). Physicians, lawyers, and inventors are mostly found to suffer from nervous exhaustion, the Doctor said, on account of long-continued deep thought and hard study. The disease affects by preference the middle aged; the young and old are, comparatively speaking, almost exempt from it. Depressing emotions, sickness, render the nervous system more susceptible to cerebral disease than other causes. Primarily the disease is only functional, but might terminate in softening of the brain if not properly attended early. Hyperæmia follows each mental strain. If this greater afflux of blood occurs often, after short intervals of time, the hyperæmia becomes chronic and permanent, and leads often to serous transfusion or softening, due to over-dilation of the capillary vessels. Nutritive changes take place, according to Prof. Erb, in spinal neurasthenia for instance. The principal symptoms of neurasthenia were, a disinclination for mental labor; confusion of thought; the memory is often enfeebled. Disturbance of the heart's action, the intestines, the liver, and the stomach, are frequently observed. Neuralgiæ are frequent concomitants of this affection. Paralysis is rare. As regards treatment, it should be commenced early. Rest, tonics, and cheerful surroundings seem to be of the utmost importance. Galvanism, to which the Doctor is especially partial, was thought to be one of the best remedial agents to be employed. Strong stimulation is out of the question; neither can we galvanize the brain directly without causing giddiness, faintness, or ocular flashes. General galvanization administered at Dr. Schweig's Institute, in the form of the galvanic baths, was highly extoled for its virtues, as many cases he had treated had convinced him of their great value. In addition to this, cod oil, phosphorus, one or both, might be given as adjuvants with advantage. Phosphide of zinc is a remedy now frequently used in nervous exhaustion by Prof. Hammond. The bromides are given to combat the hyperæmia always present in these cases. Regarding the administration of the galvanic baths, the rule is to begin with mild currents, which are increased as soon as improvement is observed. Iron may be added to the bath with advantage. Fifteen minutes are sufficient for the administration of the first bath. If

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the patient feels fatigued, even ten minutes are sufficient. Later, twenty to twenty-five minutes may be the duration of the bath, according to circumstances.

"The Malady of Innutrition" was the title of a paper read before the New York Academy of Medicine by Dr. Geo. Bayles. The present hard times, in consequence of which thousands upon thousands of formerly well-fed, clothed, and housed citizens of this republic are suffering mental and physical distress unparalleled in our history, would be, and are already, the fruitful causes of a new malady in this country, to which the Doctor proposed to give the above appellation. Physical as well as mental degeneracy, tuberculosis, nervous disorders, uterine irregularities, skin diseases, were and will be the consequences of our hard times; these would prove fatal if not suppressed. Improper food, irregularly taken and badly digested, was a crying evil of the wealthy classes. Our boarding-school girls, the offspring of well-formed and healthy parents, show by their pallid faces, their sunken eyes, their protruding cheeks, their bulging, drum-like abdomen, and their sleepy appearance generally, as well as by their stunted growth and their physical and mental lack of proper development, the evil consequences of the badly prepared and unseasonably served food-supply of our boarding-school keepers! This food question, therefore, deserves attention, and is brought forward for the purpose of enlightening the public on this most important question: What to eat, when to eat, how much to eat. The malady of innutrition, or bad, improper nutrition, being a preventable disease, the Doctor pleaded for the application of the proper remedy—supply of food to the deserving poor during the coming winter, by establishing numerous centers of food-supply, free to all who needed it.

Dr. Gouverneur M. Smith referred to intemperance as one of the causes of innutrition. Both he and Dr. Peaslee, who followed him in the discussion on this important topic, at the request of the President, Dr. Purple, remarked that the paper was a very timely one, and should be brought to the notice of the public in order that the needy might be provided with the necessary aliment to keep body and soul together, and thus prevent the future generation from being decrepid and degenerated, which they would be if the parents were half starved and ill-nourished! Bad nutrition caused cancer and phthisis, and many ills from which we were liable to suffer, and if the father or mother, or both, are enfeebled, this weakness would certainly be transmitted to their offspring.

Dr. Hanks thought it would be well to send among the tenement-house population sanitary missionaries, with circulars, approved by the medical societies, containing suggestions regarding cheap but proper articles of

diet. He did not believe diphtheria was caused by innutrition, as claimed by Dr. Bayles. Before he came to New York he practiced in one of the wealthiest New England towns, and had the misfortune of having seen many cases of diphtheria prove even fatal among well-to-do people of most regular habits and correct modes of living. The speaker himself lost a son, ten years old, who died of diphtheria.

Dr. Leaming gave a diet list for children, as follows: To children under eight years of age, milk and farinaceous food, with picked codfish, in summer time—no animal food, except milk, to be allowed. Between eight and fourteen years, solid animal food three times a week, soup twice a week, and fruit in its season. With this diet the mortality in one of the institutions under his care was reduced from five deaths in one year to one death in two years; and within the last six years, by further modifications of diet, there was but one death.

Dr. Joel Foster quoted John Randolph, who said "that Providence had given us an abundance of good food, but that the devil had furnished the cooks!"

Dr. Stephen Smith read a paper before the Academy, wherein he quoted a surgeon who performed twenty-nine amputations, one hundred years ago, without having lost one single case by death. This is certainly very remarkable, if true, the more so since, at that time, Lister's antiseptic treatment was not known.

Dr. Rockwell favored the Journal Association with a paper on "the indications for using the Galvanic or Faradic Currents of Electricity." Want of time prevented me from hearing the paper read, and, as a faithful correspondent, I give you the paper by title.

At the October meeting of the Neurological Society, Dr. T. R. Pooley read a paper on "Hemiopia." He passed in review the arguments advanced in support of the theories of total decussation and semi-decussation by different authors, and concluded that all the clinical facts, as well as post-mortem appearances, were more in harmony with a semi-decussation than a total crossing of the fibers of the optic nerve in the chiasma. A case, with post-mortem, which came under his notice, was reported, which is published in the Archives of Ophthalmology and Otology, Vol. 5, No. 2.

Respectfully and truly yours,

DR. RUDOLF TAUSZKY.

NOTE.—A number of book-notices and reviews, unavoidably crowded out of this number, will appear in our next.

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EDITORIAL.

With this number we conclude the first volume of the Ohio Medical and Surgical Journal (new series). We make this arrangement—which will not in the least interfere with the current subscriptions—simply for the convenience of having the volumes for the future begin regularly with the year. As the present volume, beginning as it did in June, will consist of only four numbers, we have added eight pages to this number, as we did also to the August number, thus making a total of four hundred pages for the volume.

In reviewing our labors thus far, we have much to congratulate ourselves upon. The Journal has presented from the beginning a most creditable appearance (thanks to our excellent publishers), and has been filled with material of a superior quality. A review of the articles that have appeared will show that many of them have been from the pens of those who are recognized authorities and leaders in the medical world, and whose contributions have a permanent value.

While this is a source of pride and pleasure, we regret that more papers have not appeared from western contributors. This can not be from want of ability; for there are many of our practitioners, in both town and country, who are known as men of great experience and talent, and able contributors to medical journals. Perhaps it arises from distrust of, or lack of interest in, a new enterprise. If so, we can only work and wait until we have won the confidence and coöperation of our colleagues, and this we shall do, "bating no jot of heart or hope," and sparing no pains, till they will freely acknowledge the new candidate for their favor, and be proud to share their favors with it as well as other journals.

We take the liberty of pointing out that in all the four numbers so far issued there has been an original table of contents from beginning to end, while many of our articles have been extensively quoted and copied. We introduce in this number, for the first time, a translated article, and have made arrangements with a medical gentlemen residing in Paris to supply regular translations of the best French articles as they appear. We have the first of the series already in hand for the next number. We have also secured a regular correspondent in Vienna as well as in New York, and reiterate the assurance already given, that we are determined to make the Journal as good as the best.

And now, while we thus ardently plan and earnestly toil for the benefit of our friends and subscribers, may we not consistently ask them to do something for us. We need more subscribers. Will not each one who already takes the Journal try to secure us one or more new subscribers? This they can do without much effort or labor to themselves, and thus encourage the endeavor to sustain in the West a really first-class and original journal. In making this request, we do not feel as though we were begging, but rather suggesting what we know many will take pleasure in doing as soon as mentioned. And this is the most favorable time for such a movement on the part of our friends, as at the beginning of the year physicians generally determine what journals they will take for the next twelve months.

This Journal is not the organ of Starling Medical College, nor of its editor, nor of any person, party, or thing, except the medical profession at large. No one dictates its policy. It has no other aim than to disseminate useful information and sound principles in all that pertains to medical science. The editor is entirely untrained by any previous experience of the sort, and has come to the task conscious of many deficiencies and of many things yet to learn. He is thankful for, and encouraged by, the confidence and support already afforded him in an undertaking surrounded with peculiar difficulties, and hopes that in his earnest efforts to serve them faithfully, he may find the catalogue of his subscribers and supporters a constantly and rapidly increasing one.

RESOLUTIONS OF RESPECT.

At a special meeting of the Columbus Academy of Medicine, held on Monday evening, November 20, 1876, to take action with regard to the death of Dr. W. M. Awl, the following resolutions were unanimously adopted:

WHEREAS, We have heard with sorrow of the death of our venerable and distinguished fellow townsman and brother physician, Dr. William Macklay Awl; and

WHEREAS, We deem it appropriate and becoming that this Academy, as a representative body, should take notice of the departure of one whose long life of usefulness has been an honor to humanity and to his chosen profession; therefore be it

Resolved, That in the death of Dr. Awl this community has sustained the loss of one whose benevolence and public spirit have done much to raise the standard of philanthropy in our midst, and been largely instrumental in founding those noble charities of which we are so justly proud.

Resolved, That in the life and labors of Dr. Awl we recognize the peculiar type of medical labor and heroism once prevalent all over the West, but now disappearing with increasing population and the improved facilities of intercourse, which, though we can not imitate, we can never cease to admire.

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Resolved, That we lament the close of this useful and honored life as the sundering of another tie between the past and the present, and the loss of an example we can ill afford to spare.

Resolved, That we honor in him who has now departed a union, all too rare, of the skillful physician and surgeon, the large-hearted philanthropist, the energetic and public spirited-citizen, and the consistent and devout Christian.

Resolved, That the members of this Academy attend the funeral of Dr. Awl in a body.

STARLING LOVING,
J. H. POOLEY,
G. M. WHITE,
C. B. FERRELL,
J. C. KROESEN,
Committee.

At a meeting of the Faculty of Starling Medical College, held November 20, 1876, the Dean in the chair, it was resolved that the College adjourn after noon on Tuesday, November 21, during the funeral services of the late Dr. William M. Awl, and out of respect to his memory as the oldest physician in Columbus. STARLING LOVING, *Secretary.*

On receiving intelligence of the death of our late colleague, William M. Awl, M.D., a special meeting of the Columbus Pathological Society was convened at their rooms to take measures expressive of their regret at his decease and the high regard in which he was justly held by those who had the pleasure of his acquaintance.

The President, J. B. Thompson, M.D., on taking the chair, announced the death of Dr. William M. Awl. He paid tribute to his sterling worth, his conscientious Christian character, and his life long labors in the service of science and humanity, closing his remarks by saying, "In this death we should all be admonished, myself especially, of the words of our Saviour, 'Be ye also ready, for in such an hour as ye think not the Son of Man cometh.'"

On motion, Drs. J. M. Denig, D. Kinsman, R. Wirth, and G. E. Summers were appointed a committee to draft resolutions expressive of the sense of the meeting. After a short time they presented the following:

WHEREAS, It has pleased the Almighty Ruler of life and death to take from his earthly labor our esteemed friend and professional brother, William M. Awl, M.D.; therefore,

Resolved, That in the character of the deceased we recognize the presence of all those traits which confer true dignity on the man, the physician, and the Cbristian; and that, although feeble health and increase of years prevented his engaging in the active duties of his profession for some time previous to his death, the medical profession of the city has sustained a loss of one of its best and most highly esteemed associates.

Resolved, That we honor him for his constant devotion to the interests of the afflicted, for his untiring and well-directed exertions in the establishment of State charities for their relief, and especially for his honorable, upright, and invariable trustworthiness and efficiency while in charge of the same.

Resolved, That we cherish his memory as a bright example of professional rectitude, Christian and manly virtues, worthy of all emulation.

Resolved, That we tender to his widow and family this expression of our sympathy and condolence.

Resolved, That a copy of these proceedings, signed by the officers of the Society, be sent to the family of the deceased, and published in the daily papers and the medical journals of the city.

J. B. THOMPSON, *President*,
GEORGE E. SUMMERS, *Secretary.* R. M. DENIG, *Vice-President.*